



Tonka Talk

Tonka Equipment Company Newsletter

Spring 2007

Chairman's Corner

By Fred Friswold

Fifteen years ago our project managers all worked on drafting boards. They were jacks-of-all-trades, engaged in designing, drafting, preparing submittals, creating construction drawings, purchasing tanks and other system components, handling logistics, scheduling start-ups, and managing punch lists. When process and equipment problems arose they solved those as well. Project Managers were like pancakes—spread all over but only ¼ inch deep.

Technology tools have brought dramatic change to our business—and how we serve our customers. Superior customer service is our goal and we have been systematically applying technology in pursuit of that goal.

We've gone from drawing boards to servers with huge memory capacity from which powerful computers can draw information and create designs. We've developed a large database of information from our more than 1600 successful installations. Drafting has become a skilled specialty instead of a part-time function of Project Managers.

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Tonka Energized by Ethanol

by Todd Butz

The average price of unleaded gasoline topped \$3 this spring and some sources indicate it's still on the rise! So why are you reading about gasoline prices in *Tonka Talk*? Everyone knows gasoline and water don't mix, right?

Ethanol Relies on Large Quantities of High Quality Water

With gas prices on the rise, the ethanol market has burst onto the scene and grabbed headlines as the savior alternative fuel. Ethanol is certainly a viable renewable alternative fuel source, but what's not obvious is the amount of high quality water required to process corn into ethanol—approximately 6 gallons of water to produce 1 gallon of ethanol. Also interesting is that many existing and proposed ethanol plants are located in relatively remote areas with poor raw water quality and limited wastewater disposal options. These are certainly two major challenges when the finished product, ethanol, relies on large quantities of high quality water.

and membrane treatment. In addition, these facilities are designed to recycle nearly all of the spent process water (from backwashing, cooling towers, and boilers) so it can be re-treated and re-used in the ethanol production process. This unique water treatment concept not only greatly reduces the amount of water drawn from the source water (aquifer or river), but it also greatly reduces the amount of wastewater generated. Tonka's Simul-Wash™ backwash system has also



Granite Falls Ethanol Plant

been incorporated into each of these plants, reducing backwash waste consumption by over 50%.

Minimizing Environmental Impact

Producing high quality water while also minimizing wastewater will be critical as ethanol consumption continues to grow in the coming years. Tonka is proud to be involved in providing cutting-edge technology, which not only meets the challenging water demands associated with ethanol production, but also minimizes the impact on the environment. ♦

Tonka Treatment Reduces Water Needs

Over the past year, Tonka has teamed with U.S. Water Services on several projects to treat poor quality waters to the standards required by ethanol production facilities using a treatment process incorporating clarification, filtration,

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- South Florida Color Removal - A Cost Effective Solution
- Award Winning Arsenic Removal Plant
- Moisture: The Biggest Enemy of Valves and Solenoids.

South Florida Town Solves Color Challenges

Tonka Provides Cost-Effective Alternative for High Quality Water

by Tom Davis

The Town of Lantana is located on the southeast coast of Florida, in an area that uses groundwater exclusively for its municipal water supply. The groundwaters in the area typically contain excessive iron, organically bound color compounds, and high hardness levels. Historically, the Town of Lantana had used chlorination and filtration to treat iron and color. The aggressive chlorination that was used unfortunately resulted in the formation of disinfection by-products (DBP) such as trihalomethanes and haloacetic acids – in concentrations that exceeded newly promulgated federal standards.

Membrane Treatment Too Costly

To address this problem, the Town considered installing membranes as a treatment alternative. But with reject rates as high as 20%, and costs nearly twice the allowable budget, membranes were difficult to justify. Withdrawal limitations imposed by the South Florida Water Management District contributed to ruling out membranes because of the high reject stream volumes. Membranes also have high capital and operating costs and would have resulted in a complete and costly re-work of the existing plant site.

Tonka's Ion Exchange System is the Answer

To solve the color and DBP problems, Mathews Consulting, Inc and the Town of Lantana worked with Tonka Equipment Company to design an economical and efficient ion exchange system for the 4 MGD water treatment plant. Included in the design were two new filter banks for iron filtration and three 12'-0" diameter anion exchange vessels for TOC reduction and color removal.

Because the ion exchange system cost was significantly below original budget, the Town was able to install an additional two 12'-0" diameter cation exchange vessels for softening, thus giving the community soft water for the first time in its history.

High Quality Water for Lantana

The facility is automatically controlled by a Tonka PLC control panel, and exhibits operator-friendly control

graphics, valve accessibility, and the instrumentation for monitoring to ensure compliance. Tonka's unparalleled experience in anion exchange systems to treat south Florida waters has assisted the Town



of Lantana in delivering high quality water for its consumers on a cost effective basis.

Excellence Rewarded

The Florida Institute of Consulting Engineers awarded Mathews Consulting, Inc the 2005 Grand Award for Engineering Excellence for their work on the Lantana project. ♦

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As we have moved from drafting boards to electronic designs we have progressed through two releases of Auto-Cad software and then to two iterations of three-D software. We now have a large electronic inventory of treatment equipment, sub-assembly, and component designs that we can quickly and efficiently compile to create drawings of complete treatment systems that incorporate state-of-the-art technology and processes. Specification control, design guides, and careful documentation reduce the opportunity for error and enhance consistency of outcomes. Our goals include faster turnaround time for consulting engineers in the design stage, on-time submittals, error-free construction drawings, improved manufacturability, and consistent, high quality results for customers that meet or exceed their expectations. We don't always execute perfectly, but we get better every day and "we don't leave the site until it's right." Tonka is committed to continuous improvement through investment in people and technology to better serve our clients. ♦

Tonka Provides Arsenic Treatment in California

by Rick Mann

Co-precipitation Technology

The City of Corcoran in the San Joaquin Valley in Southern California historically had only needed to chlorinate its groundwater supply prior to distribution. With a reduced arsenic MCL standard, the City found all of its nine groundwater wells out of compliance. The City explored various treatment possibilities. After conducting cost studies and running pilot tests, Quad Knopf, the city's engineering firm, designed a state-of-the-art 18 MGD treatment plant based on blending the raw water into a single stream and removing arsenic using co-precipitation technology.

Process Responsibility and Guarantee

One of the most important treatment objectives for the city was to have a supplier take on process responsibility and guarantee a maximum effluent arsenic level of 5ppb for 98% of the treatment period. The city and engineers selected Tonka Equipment Company to provide a cost effective treatment plant to meet the requirements of the City.

Treatment and Design

The city's multiple wells are combined at the head of the plant in a raw water blend tank. This blending reduces the arsenic levels from the most contaminated wells. After chemical addition, the water is pumped by multiple feed pumps through a static mixer and through the filters into a 2 million gallon ground storage tank. Each of the five (5) 12' diameter x 40' OAL horizontal pressure filters is comprised of two cells sharing a common underdrain. Prior to entering the filters, sodium hypochlorite, ferric chloride, and a small dose of polymer are added. The chlorine serves to oxidize any natural iron and change the valence of the arsenic from As^{+3} to As^{+5} . This arsenate co-precipitates with the iron from the ferric chloride addition, forming a filterable solid. The water is evenly split between each filter cell. Within the filter cells, the water passes through the dual-media filter bed consisting of anthracite and Greensand Plus™.

Optimizing Performance

Water conservation was another system objective. The filter backwash water is sent to a backwash reclaim tank and, after a settling period of up to 4 hours, the water is recycled back to the raw water blending tank.

The system is controlled by Tonka's PLC-based automatic control panel which has been customized to automatically backwash the filters by loss of head, time, or operator initiation. The duration of the backwash and other functions is selectable and adjustable by the operator through a color touch screen interface to optimize operating results.

The treatment process since start up has been highly effective in delivering quality water to the population of Corcoran. ♣

	Raw Water	Finished Water
Arsenic	17 ppb to 37 ppb	ND to 5 ppb

The 18 MGD Corcoran plant has not gone unnoticed. It won a 2006 Merit Award for engineering excellence.



Maintenance Tip - Keep the Air Dry

Want to keep your valves and solenoids working trouble-free for years?

By Dave Guillet

Moisture is the biggest enemy of valves and solenoids. Any moisture will cause the valve actuator and solenoid ports to rust up and not operate smoothly. Steps to make sure that the air is dry should be included in your maintenance routine. Here are a few things you can do:




1. **Weekly** – Drain moisture out of the moisture traps located next to the solenoid panel. Notice the amount of moisture that drains out; if that amount starts to increase over time, it probably means that your air dryer is not working properly.
2. Check that the air dryer (mounted on or next to the air compressor) is turned on.
3. There is a small plastic drain hose that needs to be routed so that the moisture can drain out of the dryer. Make sure this hose is clear and positioned to allow the moisture to drain.
4. Check to see if the air compressor tank has an automatic drain on the bottom. If it does not, you need to manually drain the moisture out of it periodically.
5. On the air compressor you will find two filters; make sure they do not have moisture in them. Clean or replace them when needed.

In the Tonka O&M manual you will find all the information you need to establish a complete maintenance schedule for your air compressor and other Tonka-supplied equipment.

If you have questions or require assistance, please call our Customer Service Department at 800-530-1887. ♦

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The logo for Tonka Water Treatment Systems is a blue teardrop shape. Inside the teardrop, the word "TONKA" is written in large, bold, white letters. Below "TONKA", the words "WATER TREATMENT SYSTEMS" are written in smaller, white, uppercase letters, arranged in a circular pattern.