TONKA WATER TREATMENT SYSTEMS

Tonka Talk

Tonka Equipment Company Newsletter — Spring 2011

President's Corner

By Tom Davis

Can You Give Me a "Budget Price" on that System?

When we're asked this question – usually after we've presented a solution to an engineering customer – we've learned to follow up with a few questions of our own:

When do you need the numbers?
When will your project bid?

Answers to these questions will determine the quality and accuracy of our "Budget Price" to you.

Update the Budget!

Recent volatility in commodities such as steel, stainless steel and fuel require consultants and owners to stay up to date and right "on top" of their project budgets.

Over the past 12 months steel prices have increased over 50%, stabilized, declined, and are now, once again, on the rise. Talk about volatility!

Here at Tonka, we're prepared to assist you in keeping your project budget up to date. We stay current with our fabricators on a daily basis and discuss with them overall price, timing, and availability for those important components that comprise Tonka's manufactured water treatment systems.

Save Time and Money

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WHAT'S INSIDE...

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- **Maintenance Tip -** Spring Tune-Up
- **What's New at Tonka?** (See p. 3)

Healing Waters Steeped in History

by John Berrigan

The healing properties of the warm springs in Georgia were utilized by Native Americans and many others throughout history, but it was President Franklin D. Roosevelt whose visit in 1924 made the greatest impact. Since 1927, Roosevelt Warm Springs Institute has provided comprehensive rehabilitation "to empower individuals with disabilities to achieve personal independence."

President Franklin D. Roosevelt founded the institute originally to treat persons affected by polio. The Institute provides rehabilitation to as many as 5,000 individuals a year from all over the United States.

Tonka Equipment Company was selected to soften the mineral waters of Warm Springs and provide facilities on the beautiful 950 acre campus with softened water—reducing the hard mineralized water and radionuclides to healthful levels.

Tonka Ion Exchange

Working closely with the consulting engineer throughout the design phase the Institute, managed by the State of Georgia, wanted a highly reliable system for its medical facilities and its School for Rehabilitation Professionals. Tonka Ion Exchange softening reduces the hardness of the mineral springs and assures that water for the historic campus is healthy and suitable for its mission. The ion exchange softener system provides trouble-free automatic filling of the Institute's water storage.

The Roosevelt Warm Springs Institute for Rehabilitation has continued as a living legacy for FDR and is now a National Historic Landmark. Tonka is proud of its contribution to the health and well being of everyone at the Institute.

Warm Springs, Georgia
Water Treatment Vessels

Drinking Water for Kit Carson

By Dave Robinson, Applications Engineer

Kit Carson is a picturesque small town situated near the Big Sandy River in southeastern Colorado, about 150 miles from Denver. This historic town, founded in 1838 and named for the frontier explorer and guide Kit Carson, was at one time the western terminus for the Union Pacific Railroad. The nearby wide tracts of prairie grassland are suitable for ranching and agriculture, but oil and gas wells are also scattered throughout the region. As can be expected on the front range of the Rockies, drought conditions are always a threat.

Uranium in the water

When the town discovered high uranium levels in their two existing wells, the council hired the Colorado Springs firm of GMS Engineering to investigate and recommend a treatment system to solve the problem. It was found that the water also contained high amounts of dissolved solids, with iron and manganese above recommended levels, so a combined solution was needed.

Customized design

Tom McClernan, P.E., of GMS, contacted Tonka, and asked if we could help him design an effective treatment system for this challenging water project. The final integrated Tonka system includes two vertical pressure filters for iron and manganese removal placed upstream of a Tonka customized reverse osmosis membrane system for uranium removal. Three separate treatment trains mounted on a single skid provide the necessary redundancy and flexibility to meet a variable seasonal flow demand. Each of the trains treats one-third of the raw water with a portion of it bypassing the membranes. The bypass stream enables the system to balance the water chemistry properly (ensuring adequate stability), while increasing the overall recovery to over 83%. The Total Dissolved Solids levels are reduced by more than 50% in the blended permeate, meeting all of the treatment goals of the town.

The Tonka membrane system at Kit Carson utilizes many unique features. Each of the three single stage trains includes two vertical multi-stage centrifugal supply pumps. Tonka's integrated controls and programming allow the dual pumps to work in tandem to maintain proper membrane feed and bypass flow, regardless of the upstream conditions.

System responsibility

Tonka assumed complete system responsibility for this integrated treatment system which included: chemical feed, pretreatment, automatic membrane and system controls and remote monitoring via the internet. The plant's data log sheets, accessible through internet connection, provide critical daily operation information which helps Tonka assess membrane performance. This data can be used to adjust chemical feed rates and schedule membrane cleaning when needed. Tonka's ongoing monitoring provides a high level of service and "peace of mind" for the Owner, especially while plant operators become more familiar with the system.

Ease of operation

The control system at the Kit Carson facility allows the plant to be activated automatically on demand. The Tonka system monitors tower water levels and automatically and safely turns the water plant on and off when needed. Backwash of the greensand filters is also automatically initiated based on differential pressure build-up across the media bed. The system also tracks alarm conditions and notifies the operator of non-critical alarms, while shutting down the system when alarms occur which may indicate a threat to equipment or deterioration in effluent quality.

The community of Kit Carson enjoys safe, quality water produced by their new Tonka plant, with the added assurance that their water quality meets EPA requirements.

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In this volatile cost environment, decision-makers can save project time and money by compressing their "window of vulnerability" to commodity inflation. They do this by pre-selection and pre-purchase of major treatment systems, and then designing specifically to the selected system requirements. Pre-selection with pre-purchase allows manufacturing to begin and proceed concurrently to the bid letting and general construction work, creating a win-win situation for owners, engineers and contractors.

At Tonka, we promise you'll get quality budget prices for your state-of-the-art treatment solutions – you can depend on it!

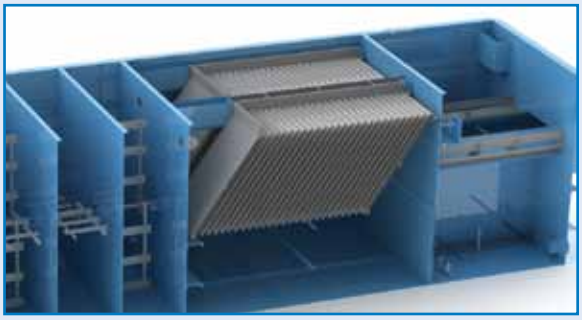
What's New at Tonka?

Hi-Rate Media

Tonka recently completed a successful high rate media pilot study in Puerto Rico for iron and manganese removal. We're excited about the promising results with our new IMAX media.

Parallel Plate Settlers

Tonka does plates!! Our fully developed UTS™-P is a complete water system with a unique Tonka plate design customized for your application.



Benchtop ORGANIX™ Pilots

Benchtop pilot tests can be used to quickly determine if a proposed treatment system is viable. In the last 12 months, Tonka has initiated over 20 such ORGANIX™ pilot tests, proving our technology suitable for TOC removal using ion exchange. Call us for information on benchtop pilots for organics or other ion exchange treatment. It's a great way to get answers on tough waters.

Tonka's benchtop units are sent UPS and can be operational in one day

Ion Exchange Removes Uranium

By TJ Stroebl

Bridgeport, a town of 1594 people, is located in Western Nebraska equidistant among Sidney, Alliance, and Scottsbluff. Not long ago, Bridgeport was pumping water directly out of the ground and into the distribution system, with no treatment required. It was then discovered that the water had elevated levels of uranium, and treatment would be required. The town worked with their engineer, Olsson Associates, to come up with a solution to handle the situation.

A natural element and a byproduct—two sources of uranium in water

Uranium normally exists naturally in groundwaters, slowly dissolved over time from soils and sedimentary rock. It also can be a byproduct of fertilizer application, mining activity, and combustion. Uranium is classified as a human carcinogen and is known to cause kidney toxicity; thus it is regulated by the Environmental Protection Agency as a primary contaminant. The maximum contaminant level MCL is set at 30 µg/L.

Olsson Associates chose Tonka and its ion exchange as the removal technology for Bridgeport's solution. Bridgeport's supply has a pH range above 6.5, so uranium appears as large and negatively charged carbonate complexes, which can be removed via ion exchange. Tonka Equipment Company was selected to conduct a pilot study to prove out the selected ion exchange technology. Tonka erected pilot equipment on site and trained personnel from the both the Town and Olsson Associates in its operation. Bridgeport personnel operated the equipment for approximately three months, regularly performing field tests and taking samples for lab analysis. The pilot test showed consistent uranium removal to well below the MCL, allowing the engineer to confidently proceed with a Tonka full-scale system design.

Safe drinking water for Bridgeport

The three 8' diameter vessels in Tonka's ion exchange system treat raw water containing 78 µg/L of uranium. This operator-friendly system regenerates once per month, with a finished water quality that reduces the carcinogenic contaminant to levels well below the MCL, providing the people of Bridgeport with quality water.

Maintenance Tip - *Time for a Spring Tune-up!*

By Steve Kari

Filters:

- Have treatment conditions changed? Check your influent water and effluent quality.
- Are chemical feed rates set properly so that all iron and manganese is oxidized?
- Have you checked that backwash cycle times are set correctly?
- Are the Simul-Wash™ backwash rates set at the proper flow rates and frequency?
- Have you checked media depths lately? (The depths should be recorded annually.)
- Does your greensand media need a **Potassium Permanganate** charge?
- Is the required chlorine residual going to the system?
- Are the air release valves working properly? They should allow air into tank when tank is draining down for Simul-Wash™ step, and release air when filling after a Simul-Wash™ step.

Softeners:

- Are you meeting your target for a specific water hardness?
- Is the bypass operating at the proper bypass rate?
- Are the air release valves working properly? They should release air when filling.
- Is the softener stepping through a backwash program properly?

Air wash Blower:

- Verify that the drain solenoid is functioning and draining when blower is not running.
- Verify that the AWI valves are closed until blower is on, then open. After the Simul-Wash™ time for air scour, the valves close before blower shuts down.

Air compressor:

- Is there an automatic blow down? Call Customer Service for information on a new “zero loss” auto (silent) blow down to drain condensate from air compressor. (800-530-1887)

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