

BURNS & MCDONNELL FOCUSES ON FAST IN WATER BY OPTIMIZING PROJECT COMPLETION WITH DESIGN-BUILD, CMAR AND EPC SERVICES

Burns & McDonnell is a family of companies made up of more than 6,000 engineers, architects, construction professionals, scientists, consultants and entrepreneurs with offices across the country and throughout the world. Burns & McDonnell is a full-service engineering, architecture, construction, environmental and consulting solutions firm, based in Kansas City, Missouri. Burns & McDonnell will plan, design, permit, construct and manage facilities all over the world. The company is 100% employee-owned and is on Fortune's 2018 list of 100 Best Companies to Work For. Ron Coker, senior vice president and general manager of the Water Group, is responsible for all of the firm's water business globally. During his career, Ron has served as program director and project manager for large-scale, complex projects in the water, public works, aviation, manufacturing and energy sectors. Ron has led innovative initiatives, including Kansas City's \$4.5 billion Overflow Control Program, recognized as the first Consent Decree program of its kind to utilize green infrastructure and adaptive management principals as part of the design solution.

EBJ: How does Burns & McDonnell participate in the water market? What are some of the highlights of your water business unit? How do you develop a larger platform towards recurring revenue streams?

Coker: Burns & McDonnell specializes in moving projects horizontally across the project delivery chain from concept to completion as quickly as possible. Our business is built to optimize project completion because we know that faster projects save our clients money. Our Water Group provides these optimized project delivery services to a variety of clients in the public and private sectors, often in the form of design-build, construction management, construction manager at risk (CMAR) or program management services in the public sector; and engineer-procure-construct (EPC) services in the industrial sector.

EBJ: What is being done to preserve our water supply in the United States? How has climate change impacted the way that this is handled? What type of related services are the ones that have most demand in the country?

Coker: Cities have begun not just to protect their water supply, but to make their water supply more flexible to address climatic conditions. A great example is the innovative investment made by the City of Wichita, Kansas, in its own water supply and treatment capabilities. Over the past decade, Wichita has invested in an aquifer, storage and recovery system that not only allows for replenishment of their groundwater supply in times of excess rainfall, but helps protect that groundwater supply from contaminant intrusion due to depressed water levels.

In times of plentiful rainfall, the city can utilize its surface water supply and recharge its groundwater supply. In times of drought, the city then has a plentiful groundwater supply to draw from.

Diversifying the water supply makes the city better equipped to deal with a variety of situations and prevents its water sources from stressing due to climatic conditions. The city is now investing in new and more effective treatment options to see that this thriving community will have ample water for the next century.

EBJ: Can you talk about the state of our water/wastewater infrastructure? What trends have you noticed in the past couple of years and what effect has the Trump Administration had on it? Has there been substantial investment from the government in this area over the past year? What should we expect in the near future? What about funding coming from the private sector?

Coker: We have been fortunate that our infrastructure put in place over the last 100 years has far outlived its life expectancy. It is time to start rebuilding that infrastructure. Municipalities and utilities must increase funding streams to levels needed to maintain and rebuild the systems they operate. This is no easy task because historically low rates have caused rate payers to become accustomed to underinvestment.

We believe the public is more aware than ever of the need for infrastructure reinvestment. While still painful, they better understand the need for higher water and wastewater rates. Now, municipalities and utilities must take that goodwill and bring innovation to the equation, both in developing more efficient methods of delivering capital projects and by investing in innovative materials and technology to make those systems last even longer in the future.

EBJ: We presume that the potential for alternative water supply projects is focused on specific geographies. Do the characteristics from the arid West or what other characteristics define the geography with best potential for these integrated investments?

Coker: Geography is just part of the equation when it comes to providing ample water supplies. Creativity in tapping new water supply sources and managing existing sources to extend the life of those sources is equally important. Also key is a willingness to explore new sources, such as reuse, and to invest in the development of the resources needed to diversify water

supplies and increase resiliency to climatic conditions.

EBJ: How do you think water prices will change over the next years? And do you anticipate any changes in water consumption as cities become “smarter”? How is the “smart water” trend impacting the industry?

Coker: Nationally, residential water and sewer bills have increased about 5 to 6 percent annually based on a variety of industry surveys. Despite these revenue increases, reinvestment in renewal and replacement of existing infrastructure is lagging for many systems. While every community is unique in the issues impacting their utility rates, we anticipate this national trend in the cost of water will continue for the foreseeable future.

“Smarter” water and sewer systems provide critical information to improve operating efficiency and more effectively invest in system infrastructure. In this way, the emerging “smart water” capabilities can provide strategies to achieve more out of each dollar of utility revenue.

EBJ: Are certain industries taking a lead on reducing water consumption through either reuse or innovation? What are they doing and what impact is it having in our industry?

Coker: The drivers for reducing water consumption impact industry regardless of type. Facilities located in areas under water stress are aggressively reducing water consumption through reuse or innovation. For example, facilities in parts of Texas and the Southwestern states are reusing wastewater and forming partnerships with their local municipalities to reuse treated wastewater effluent. We regularly engage with owners in the energy, oil & gas and heavy manufacturing sectors to find innovative water management solutions to meet challenging water issues, such as rainwater harvesting, zero liquid discharge and wastewater reuse.

EBJ: Could you give an overview of harmful algal bloom problems that the drinking water industry is experiencing? What measures are being implemented at water sources as well as at water treatment facilities to deal with this problem?

Coker: Harmful algal blooms from algae and cyanobacteria overgrowth are problematic throughout the country. These events can have a severe impact on aquatic ecosystems, create taste and odor problems and synthesize very toxic compounds. Harmful algal blooms are made more frequent and severe with nutrient pollution from human activities and create a health risk to people and animals. These compounds are easily detectable by human senses, very difficult to remove and require advanced treatment techniques to achieve safe levels for human contact. As a result, problems related to cyanobacteria and harmful algal blooms will increase treatment cost and impact local economies.

When these events occur, granular algacide chemicals can be added to a reservoir to help reduce the overgrowth. Advanced technologies such as ozone, advanced oxidation or activated carbon can be used at water treatment facilities to oxidize or removed the harmful compounds in the water supply.

EBJ: How is innovation shaping the industry in terms of data collection, water treatment, effluent monitoring?

Coker: Smart infrastructure is playing a larger role in the operation of water and wastewater utilities. One great example is Kansas City, Missouri, a national leader in smart technology application, which is deploying smart technology into its sewer system to better manage flows through

the system and to take advantage of natural storage the system provides to manage overflows. Thinking about how to use infrastructure to gain ancillary benefits is the key to smart infrastructure integration and Kansas City is on the forefront of that innovative thinking.

EBJ: How is the wastewater industry taking advantage of resources to convert waste-to-energy? What do you believe is needed to produce higher amounts of energy from wastewater treatment plants? What changes should we expect in the near future?

Coker: Nowhere is the nexus between water and energy more apparent than in the water sector. Water and wastewater utilities are among the largest consumers of electrical power while power producers are among the largest consumers of water.

For decades, the water industry has led the way in increasing energy efficiency and is making the shift to energy production from the capture and use of renewable biogas produced as a byproduct of anaerobic stabilization. Recent federal, state and local regulation and the movement to decrease greenhouse emissions have led the

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many fuel producers to include renewable biofuels in their portfolios making renewable biogas even more valuable than ever. A number of savvy municipalities are recognizing the incredible value of their renewable biofuel and are placing it into the renewables market at much higher returns than other inhouse uses such as combined heat and power.

The nexus between wastewater collection systems and energy production is not so obvious. Keeping substances like waste foods and fats, oils and grease out of our collection systems does more than protect collection system infrastructure; it also provides a huge opportunity to produce biogas from these energy-rich waste products, and many wastewater utilities are taking advantage. Related initiatives such as thermal and energy recovery from liquid

streams will continue to be researched and implemented as a means of energy product. Solar generation is also well-suited for installation at wastewater plants due to the confluence of peak solar production and diurnal influent loadings.

The emphasis on renewable energy, energy self-sufficiency and reducing greenhouse emissions may ebb and flow but it is not going away. When the emphasis shifts to making the business case for smart sustainable investment in renewables, the wastewater industry will lead the way.

EBJ: Have you noticed any other trends of importance?

Coker: We are seeing more and more municipalities and utilities take advantage of alternative forms of project delivery to reduce project schedules and save money.

This acceptance of alternative forms of construction and procurement, which are more prevalent in the private sector, signals a shift in public sectors utilities geared towards becoming more efficient and productive in delivering larger capital programs. □

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