



In deep water

With the water and wastewater market set to grow to US\$1.87 billion by 2013, *MENA Infrastructure* asks a panel of experts for their opinions on the huge investments in infrastructure currently going on in the region.

The water and wastewater sector experienced rapid growth in 2008 fuelled by huge investments in infrastructure, but the global economic crisis is now expected to restrain market growth. What impact has the crisis had on the sector in your opinion?

Tony Wynes. The restraint on the previously increasing growth of the infrastructure market is most likely to reduce the need for water and the amount of wastewater available for recycling. This will enable a period of analysis and environmental management planning to take place.

Water is vital for mankind's survival and the effects of climate change must be taken into account. This is a time for reflection and the preparation of revised environmental plans to determine each state and country's total water requirement for personal consumption and the growing of food crops.

As the depth of the oceans increases, sea level landmasses will disappear. Those which survive need to estimate the amount of rain they will receive from the violent storms of climate change to feed the rivers, and build desalination plants to cover the rest. It is vital

to dam rivers and build reservoirs to ensure that there is a large enough reserve of water to overcome hot dry periods with no rain.

David Tomowich. As we all know, water is vital to survival and therefore proper treatment of water, including disinfection, is key to maintaining a healthy community, environment and economy. The global economic crisis has been felt within the industry on a project level as some projects have been delayed or even cancelled due to funding re-prioritisation or lack of residential development and con-

struction. Having said that, the water industry overall continues to grow since water is such a vital resource. Even during tough economic times there is usually a focus on infrastructure that includes developing the supply of safe reliable water treatment.

Lisa Henthorne. I work predominantly in the desalination industry and we experienced some slowdown in growth in 2009 as a result of the economic crisis. In the last few years

our industry has experienced unprecedented growth – 27 percent compounded annually—however in 2009 we saw some project tender dates slip into 2010 and beyond. A few large desalination projects failed to reach financial closure in 2009 and had to be resubmitted for financing or shifted from privatised to government-owned projects.

The planning and construction cycle is lengthy in the water and wastewater sector, so while we are slow to feel the impact of the eco-

nomics crisis upfront, we will continue to experience it well after the actual crisis has passed.

What are the biggest challenges facing the water industry in the Middle East? How is your solution best placed to tackle these challenges?

DT. The Middle East is experiencing unprecedented growth that will naturally put a lot of strain on the existing infrastructure in place to treat water. A big challenge may be the planning as well as having resources in place to keep up with the growth and demand for water and wastewater treatment – especially considering the water shortages already experienced in most middle-eastern countries. Another challenge for the Middle East will be to put in place and enforce regulations that ensure minimum water treatment standards are being met during this period of rapid growth and beyond.

Trojan's UV disinfection solutions have played an integral part in hundreds of reuse and water recycling plans worldwide. UV can easily be installed into existing wastewater or drinking water plants to increase levels of public health protection. In terms of meeting sustainability objectives, UV offers a safe chemical-free approach to disinfection with an environmental footprint significantly lower than alternative disinfectants or desalination.

LH. The Middle East has extremely limited renewable water resources. Desalination has enabled development of the region into a global financial hub and premier supplier of fossil fuel that powers the world. But desalination plants are capital-intensive, time-consuming to construct and require considerable power to operate. WATER STANDARD offers a solution that addresses these challenges by bringing a desalinated supply onboard a large ship to water-short cities or industrial areas in a timely fashion (approximately 18 months). We're also equipped with our own power plant and financing. We simply sell water to the customer – thereby reducing the traditional challenges inherent in tendering, designing, approving, constructing, financing and operating a desalination plant in the Middle East. One of the aspects of WATER STANDARD that I am most proud of is our dedication to protect the environment. Most of the WATER STANDARD intellectual property is associated with treat-

The Panel



David Tomowich, who has been with Trojan Technologies since 1993, has worked in sales management in the US, Europe and now as the International Sales Director. He has worked on some of the largest UV disinfection applications including storm/wastewater treatment in Southeastern USA and drinking water systems for New York City.



Lisa Henthorne is the Chief Technology Officer of WATER STANDARD and served as the President of the International Desalination Association (IDA) from 2007-2009. Professionally, Henthorne has more than 20 years of experience and has published more than 70 papers on desalination and membrane technology.



Tony Wynes is Managing Director of Aquarius Marine Group, that he set up 37 years ago as a Diving Maintenance and Environmental Consultancy. This led him to invent and coordinate the design of the 'Aquaerator' which is patented in many countries. He was a Founder Member of the Environmental Industries Commission, inaugurated at the House of Lords in April 1995 and has worked with six major water companies.



In my view

RICHARD MENEZES is CEO of United Arab Emirates-based Utico, a utilities company specialising in water, sewage, steam, power and related services for clientele requiring reliable, low-cost supply of utilities.

We do not provide luxuries, but the basic necessity for life. Water is life and we ensure it is provided reliably and economically. Because there is a global crisis, people will not stop using less water proportionately unless many industries close down altogether. There will always be some that are building.

However, building additional capacities for drinking water during these times is required – this is a stimulant for growth, both as an employment provider and as a service to industry and population as growth returns. The trick as usual is to find a balance through phasing, and also between supply and demand.

The biggest challenge to the water industry is to educate the government and consumers about policy and conservation respectively. Governments all over the world must change the way they look at water as a low-cost commodity. What they should do is to differentiate between commercial water supply and domestic supplies by charging more for large consumption from domestic consumers, while at the same time keeping a higher starting tariff for commercial consumers that comes down when their unit average consumption reduces.

This allows the government to reduce liabilities when they commit to long-term off-take agreements with water generation companies, which should not happen in the first place. What should happen is that the government should act as a concession provider for an area and facilitate through policy and regulation that the water generation companies are not merely money and technology providers, but true service providers right to the point-of-use, including billing and collection. Risk can be mitigated in so many ways that the government doesn't need to take all the risk. Another challenge is weeding out fast-track moneymakers in the water industry and accepting true service providers in the industry.

Building new capacities and conservation are the growth areas for the future. Water re-use happens when there is sufficient fresh drinking water in the first place – there is only so much that can be re-used. Conservation is another area where a service provider role should be included, through which the developer, regulator and consumer benefits. We are the only company servicing all these areas – the only true full service provider.

MENA is relatively a water-scarce area; however, the region is not alone in its water problems. Building capacities through seawater desalination as an alternative water source is an area of growth, and water re-use through treated sewage effluent is another. There is also an increasing market for water purifiers, which will help somewhat in overall technology development.

ing water from the sea in such a way that the marine environment is protected.

TW The biggest challenge facing the Middle East is following the huge infrastructure growth – is there enough water retained behind dammed rivers and large enough reservoirs to store at least a year's water requirements? Trees can be planted on the windward side of these waterbodies that will help the world's carbon footprint and reduce the effect of sandstorms.

Aquarius has spent 37 years innovating systems that improve the quality of water in reservoirs and our cutting-edge 'Aquaerator' is now the scientifically proved answer to many reservoir problems. These include stratification, which causes water below eight to 10m from the surface to be oxygen deficient and have metals in suspension. Unfortunately few people realise that bed water has a higher density than surface water, thus the cheapest form of surface water aeration is provided by the wind. It is vital to place aeration and mixing devices on the bed, using the simple principle that it takes more energy and costs more to force air down from the surface, whereas a bubble plume from the bed rises naturally towards the surface. Our technology, financed by a major EU grant, also rotates the bubble plume. This causes considerable additional entrainment by using an Aquaerator, which has no moving parts to wear out.

Governments in GCC countries have identified municipal wastewater treatment as the priority area for multiple reasons including the achievement of the Millennium Development Goals. Where do you see the main growth opportunities in the water and wastewater sector and what are you doing in this area/s?

LH. Desalination will continue to be a high growth area in the GCC countries but advanced wastewater reuse also represents a high growth opportunity in the water and wastewater sector in the region. Advanced wastewater reuse utilises the available municipal and/or industrial wastewater to produce a high-quality product water that can be used for economic-enhancing purposes. Presently, the GCC countries treat their wastewater to standards for use in green-belt irrigation but much is disposed in the sea. As advanced water reuse is less expensive than



seawater desalination, it should be considered as a primary component of the water supply portfolio of the region.

WATER STANDARD is developing ship-based facilities to treat produced wastewaters generated by the oil and gas industry, to standards for reinjection in waterflooding oil and gas reservoirs. Our approach offers a solution to the growing problem of disposal of these produced waters in an environmentally-sensitive manner, as well as creating a resource that adds value to the process of producing oil and gas.

TW. Municipal wastewater treatment is vital to improve the quality of life of the whole population and for increasing the overall water available for recycling.

However, existing wastewater technology still has a high carbon footprint due to the electricity used to recycle it. Thus we have designed an Aquaerator that we consider will prove more efficient by using less electricity. It is also removable from the bed for cleaning and replaced without the major cost of emptying the main operating tank. The prototype will be tested in early 2010.

Future environmental management plans need to show a main growth area in the water and wastewater sectors of building reservoirs and dams on rivers. This enables storage of vast quantities of raw and recycled water to ensure

that each country or state is able to grow its crops and the population does not become ill through malnutrition or dehydration.

Aquarius innovation strategy has been to ensure that our products use as little power as possible and have no moving parts requiring maintenance. The various Aquaerator designs improve reservoirs, lakes, fish farms and fishery water quality.

DT. In the drinking water sector, Trojan is designing and providing ultraviolet systems that protect the public against potentially harmful protozoa, bacteria and viruses. To date, these drinking water installations tend to be on a smaller scale. We are encouraging the adoption of UV disinfection technology by larger facilities – the benefits to the cities and communities are significant. Regulations, installations and experience is available globally and can be drawn upon as needed in the Middle East.

UV disinfection has played a key role in the Middle East for over a decade and will continue to be a growth market. The demand for reliable technology and the use of best design practices needs to be a priority of regulatory agencies, consultants, the end-user and equipment suppliers alike. Meeting the demands of growing populations and addressing water scarcity will only be successful if new standards of treatment are formulated and adopted into future water treatment plans.

A recent Frost and Sullivan report concludes that the water and wastewater market is set to grow to US\$1.87 billion by 2013. What are your thoughts on the water and wastewater industry in the MENA region over the coming three years? What do you expect to see happen and what do you hope for the sector?

TW. It is vital for the MENA region and the whole world to have environmental management plans for water and wastewater. This plan should be used as an opportunity to identify the systems that are the most energy efficient in order to ensure the lowest carbon footprint.

I hope the sector will build reservoirs, lakes and dams on rivers to store the planet's and human beings' most vital commodity for the progression of life itself, water. Trees can surround the water to reduce the effect of climate change and sandstorms in order to become the oases for future generations.

DT. We expect to see significant project-related activity including UV applications and significant growth and advancement in the field of water treatment – especially as the economy rebounds and delayed projects move forward. We need to ensure there is proper design, validation and application of technologies in any rapidly growing market to ensure a successful outcome. Industry leaders, regulators, consultants and end-users all need to play a role to ensure objectives are established and met.

I expect to see rapid growth in the water and wastewater treatment sectors in the coming years. My hope is that we see additional emphasis on inherently greener technologies and that industry participants take an active role in the development and implementation of critical planning projects, policies and regulations that address water scarcity in the region.

LH. Due to the non-renewable nature of water in the MENA region, my hope for the future is that water becomes a truly valued resource. For this to occur, pricing must reflect its value in order for the users to treat it with the respect it deserves and use it wisely. This renewed respect for water will trickle down to its environmental value, and we will be encouraged to consider the environmental impact of its production as well as the impact of the disposal of wastewater in the sea. ■