

Beyond The Barriers Of Water Reuse

Water reuse may be the moment's most talked about treatment industry topic. It's no wonder that as drought persists in regions throughout the world without sign of subsiding, questions about how we can make the most of our water are being asked.

An answer can be found in the ways that we apply membrane bioreactor (MBR) technology. As one of the most central components for water treatment, much can be done to make the process more efficient, sustainable, and equipped for water recycling at the MBR level. Water Online spoke with the team at [BioMicrobics](#) — Robert J. Rebori, president, and Jennifer Cisneros, director of marketing — about environmentally friendly MBR solutions, green building standards, and how to handle fouling.

What principal drivers have led the market to call for more environmentally conscious, sustainable membrane bioreactor solutions?

Water reuse, direct discharge, high water tables, and nitrogen-sensitive areas have all become drivers towards sustainable MBR solutions.

Regulations also always play a big role in the water industry. When using decentralized wastewater treatment technologies there are a lot of factors, from the type of wastewater generated that will need to be treated, to the amount of flow expected and the geographical and terrain situations.

Beyond these main drivers, a sustainable MBR system also leads to the most accurate type of design because it considers various parameters such as flows, biochemical oxygen demand (BOD), total kjeldahl nitrogen (TKN) loads, the relationship among BOD, TKN, and alkalinity, temperature, plus the relationship among various unit processes.

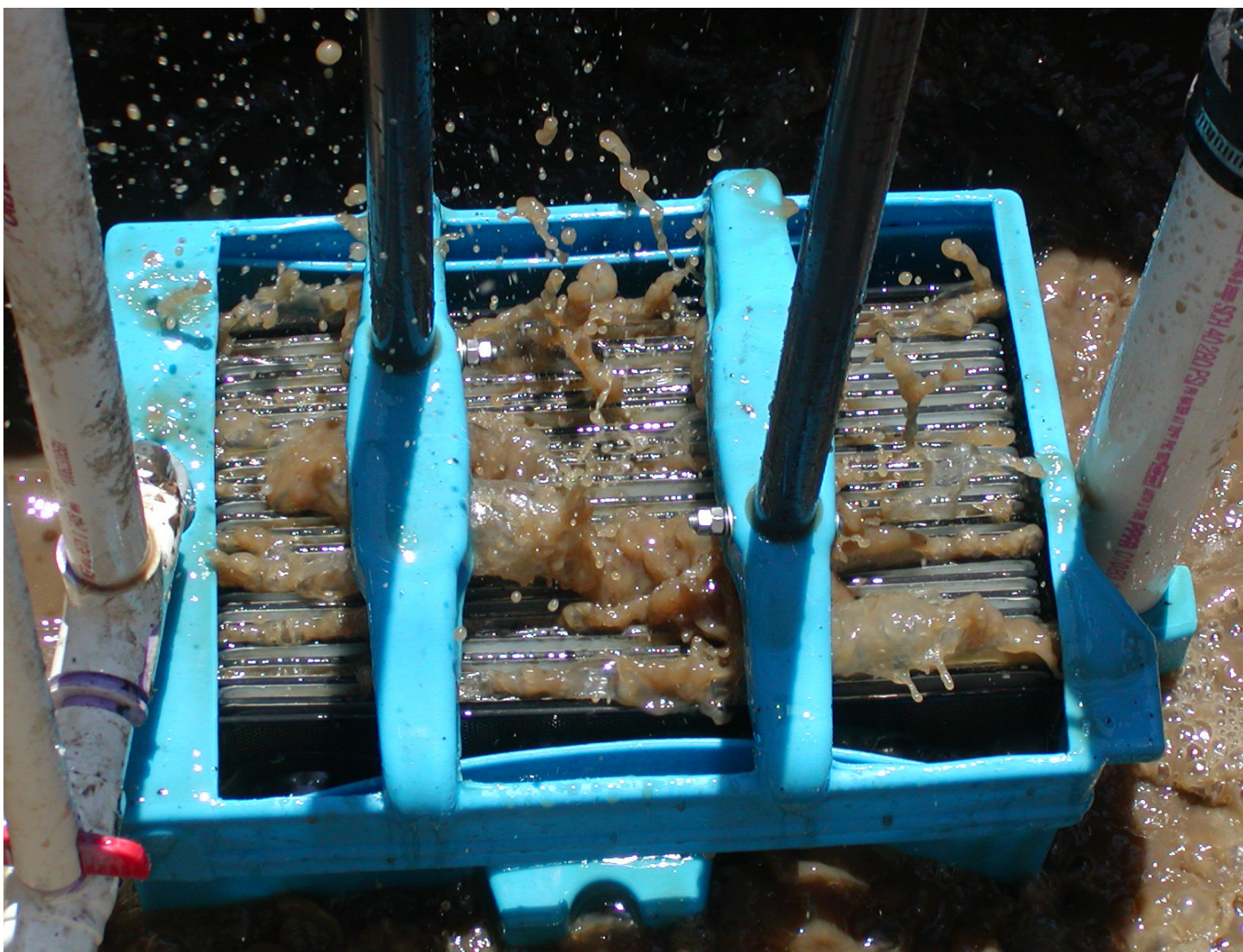
How was the BioBarrier MBR designed to meet these recent demands in treatment solutions?

It is a membrane bioreactor system utilizing biological processes and membrane separation to treat wastewater to a high standard, allowing the wastewater to be reused in accordance with [NSF-350 certification in the U.S.](#), [BNQ certification](#) in Canada, and [EN 12566-3 certification](#) for the European Union. The membrane



bioreactor acts as a batch reactor and knows when to cycle on and off. The activated sludge provides the bacterial treatment while the membrane provides the physical treatment. Additionally, all electrical systems are tested and certified to [U.L., C.S.A., and C.E.](#)

The BioBarrier system is primarily used for water reuse, direct discharge, low effluent total nitrogen (TN) requirements, and minimum disposal land applications. It was designed to be simple and robust and to operate with very little maintenance, two visits per year.



What standards for green building programs does the BioBarrier MBR meet?

It meets LEED Green Building Council standards. The guidelines for most Green Building Programs do have a section and award for water efficiency through the use of low-flow fixtures and innovative wastewater treatment systems. They consider things like controlling the consumption, reducing water-intensive applications, providing onsite treatment, capturing and using alternate water sources like rainwater, graywater, and blackwater [wastewater from toilets], and smart irrigation practices.

The BioBarrier MBR is certified for water reuse. Do you think the public at large is more receptive to water reuse

than it has been in the past? If so, what do you see as instigating that change?

Yes, the public seems more receptive, likely driven by changes in regulations, water shortages, and the rising cost of water.

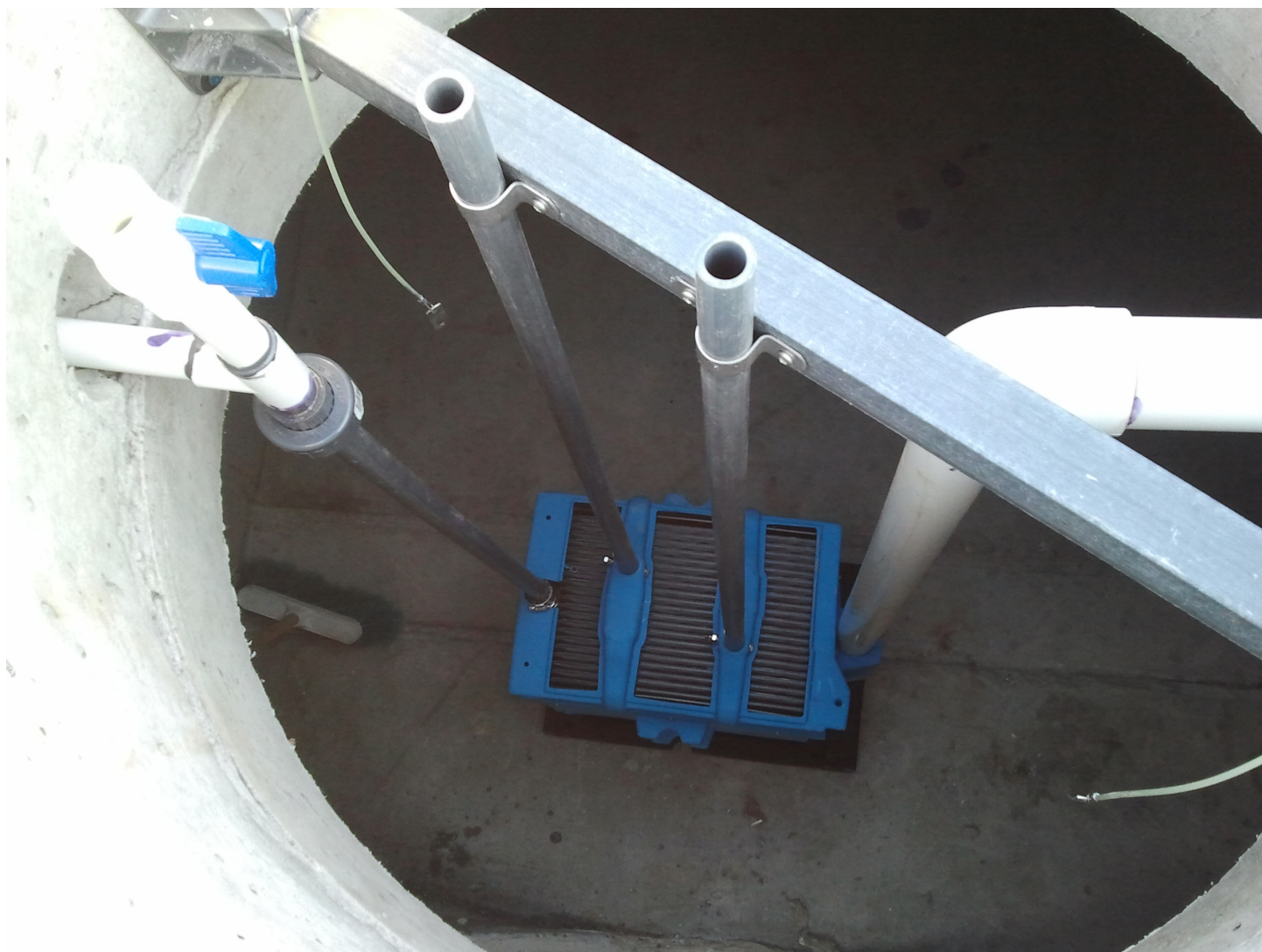
It's less about the cost of the system, even though short-term gains are achievable, and more about making the building or home a model of sustainability. BioMicrobics' ecological, decentralized solutions satisfy project goals and offer more opportunities for what to do with the treated water. With a long, proven history, these systems have performed exceptionally well in achieving new, higher levels of nitrogen removal, net-zero water, and optimal effluent quality with the automated, energy efficiency

standards that are required today.

Even distributed system scenarios find the BioBarrier MBR to be a viable alternative to public sewer systems. It offers the chance to no longer divert millions of gallons of treated and untreated water to our waterways, but to use the MBR systems onsite to recharge the local groundwater and bring the water back to the source.

Who is the ideal end user for the BioBarrier MBR?

To date, over 2,000 residential and commercial consumers who really need clean water. Whether for design-build projects or retrofits for property owners or "green-builders" wanting environmentally responsible onsite blackwater and/or graywater treatment systems, the BioBarrier can



help provide clean, treated wastewater for water reuse opportunities for sustainable architecture and high-performance buildings to meet onsite water conservation goals. We also provide other innovative stormwater treatment opportunities.

Why should residential systems consider employing their own wastewater treatment solutions?

It will be a less expensive choice, plus it creates a smaller footprint and offers water reuse options.

What commercial applications does the BioBarrier MBR have?

It can be applied to large office buildings,

wineries, and food processing factories, among other enterprises.

Membrane fouling is an issue we hear about consistently from MBR users. How does the BioBarrier handle fouling?

Most other MBR systems on the market have automatic, chemical clean-in-place (CIP) control for cleaning every two weeks. With the BioBarrier MBR system, we tested for one year in the U.S., one year in Canada, and nine months at a European testing facility with no cleaning or maintenance performed during the testing period by design. It is a robust design and a simply operated system. We recommend

the CIP procedure be done only twice a year, whether you need it or not, compared with the 26 times per year that users experience with the other systems.

Looking forward, do you see the water and wastewater treatment industries approaching a more sustainable future?

We do at least hope to strive in that direction. We have been encouraged by the rise in demand for sustainable technologies and hope that products and practices enabling green solutions to the world's water needs will grow as we all become more aware of what our planet deserves. ■