North Las Vegas MBR Plant is Protected from Hair and Fiber by Center Feed Drum Screen

"We depend on the HUBER fine screens as the final layer that can keep damaging hair strings from reaching the membrane strands. These screens are one of the most critical technologies in our plant."
-Layton Brown, Maintenance Supervisor

The City of North Las Vegas's field facility is a membrane bioreactor (MBR) plant that was brand new when HUBER's screens were implemented as part of its new water treatment and reclamation process. The facility is "smart," using a level of technology at which few large plants operate and employing sophisticated security that even includes a laser perimeter.

The smart technology enables 24-7 processing with 14 of its operational hours being unmanned on site. It is easy to see why HUBER is proud that its technology can play a key role in such an impressive and innovative technology line-up.

During their planning process, the City of North Las Vegas was advised by GE to include fine screens in their MBR plant design. The supplier of the bioreactor's membrane recommended HUBER's center feed drum screen as the best technology to prevent wash around that can ruin the bioreactor membrane.

> "The design uses the backwash to clean the screen out. It runs on the differential of the water on the up and down sides of the screen. When the elevation is right, it flips to clean. We make a couple of precautionary checks each month and clean everything off with fire hoses. But we rarely find an issue. We occasionally find solids to remove – and sometimes they are worth keeping. We even have the first dollar bill that we found in the screen framed in our office."
>
> -Layton Brown, Maintenance Supervisor

The City of North Las Vegas is an impressive MBR plant:

- Some of the largest fine screens operating in the U.S. (center feed drum screens each measuring 8.5 feet in diameter in 10-foot-wide channels)
- Alternates four center feed drum screens in processing an average flow of more than 8.5 million gallons per day
- Center feed drum screens critical to protecting the bioreactor membrane
- Drum screens enable the plant to maintain turbidity coming off the plant that is better than most potable water

Challenge:

North Las Vegas's MBR plant is capable of producing high quality permeate but only if it employs the capabilities of components that keep solids as well as hair from reaching the reactor membrane.

Solution:

A coarse screen and two chambers at the headworks separate many large solids from North Las Vegas' flow before it reaches HUBER's Rotomat RPPS center feed drum screens. Removing the large solids allows the HUBER screens to work at their most productive capacity to prevent hair from reaching the reactor membrane.

The fine screen layer is critical to:

- Smooth operation of the bioreactor
- Quality of permeate produced
- Protection of the membrane

Dan Commons, Water Reclamation Facility Administrator, and Layton Brown, Maintenance Supervisor, are proud of their plant.

While some other MBR plants have implemented 4mm screens, North Las Vegas took their screen requirements down to 2mm. By using the HUBER Rotomat RPPS® strategically within their process, it works as a true layer of protection as the flow moves

through a final chamber and to the membrane area.

"The screen is an absolute barrier between gasses and the flow – because of the seals and gaskets. This plant has been up and running for more than 2½ years and we've not had to change them yet. That really speaks to durability because the gasses that come off the sewer will eat right through metal."

-Layton Brown, Maintenance Supervisor

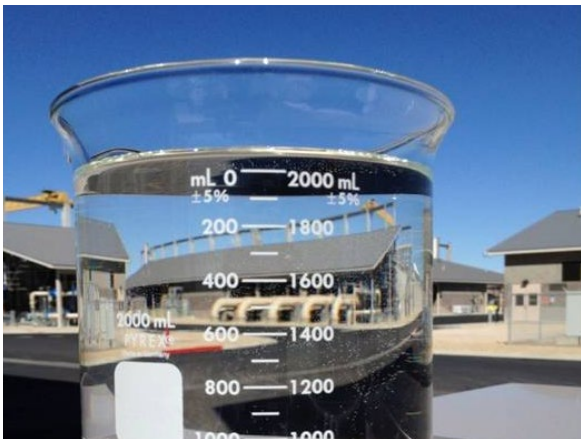
Lack of protection has dire consequences

If hair strings reach the bioreactor membrane, they can wrap around and then cause build-up on individual membrane strands. This can result in obstruction of the flow around the membrane or breaking off of the individual strands. Obstruction or damage to a single strand would not be a significant issue. However, because build-up in this situation would be continuous, many strands would become damaged and create a combined impact that would jeopardize the water quality and require expensive repair processes.

Hair is a big deal within a water reclamation plant's flow. While each strand is tiny, each one becomes tangled with others to create hair masses of monstrous proportions. Commons' previous plant experience gave him opportunity to witness a hair string of 20-30 feet in length and 6 feet in diameter moving within the flow. With that type of potential, it

"We consistently produce permeate that is an order of magnitude cleaner than what most cities have for drinking water. Our permeate is consistently selected as the cleaner choice even when compared with bottled water in demonstrations for tour groups that visit our plant."

-Dan Commons, Water Reclamation Facility Administrator



is clear to see why treatment strategies that employ proven fine screen technology are implemented and why HUBER's Rotomat RPPS® is high priority

"Since there are 3,900 membrane strands in each cassette, it doesn't seem that damaging or breaking one would matter. However, hair build-up produces a snowball effect on the strands and can quickly escalate to very expensive and damaging levels. Cassettes are about ¼ million each to replace and we would take a $15 million hit if we had to replace all of our membrane strands, so we're very protective of them."

-Dan Commons, Water Reclamation Facility Administrator

equipment at the North Las Vegas plant. HUBER's Rotomat RPPS® can ensure for Commons and Brown that such a monstrous hair string would never reach their bioreactor membrane.

Simple, durable and self-cleaning

To Commons and Brown, HUBER's technology stands out because its design is simple which makes it easy to maintain and operate. The self-cleaning aspect is accomplished through simple physics: when the flow reaches the tipping point the screen rotates to clean itself off. If this process doesn't take place within a

set time parameter, the self-clean process is tripped automatically.

HUBER's Rotomat RPPS® is completely fabricated of stainless steel with the exception of the nylon seal and rubber gaskets that keep gasses from escaping the screen and permeating the flow.

Teaching them to fish

The old proverb "Give a man a fish and you feed him for a day; teach a man to fish and you feed him for a lifetime" is applicable to HUBER's service team. The

"HUBER's folks even gave us 'what happens if you don't' scenarios that helped us to drive home the importance of maintenance to the entire team and to the plant. The HUBER component is vital to our plant and we take great pains to do what they recommend between the visits provided by their Maintenance Contract."

-Dan Commons, Water Reclamation Facility Administrator

North Las Vegas plant's design implemented some industry innovations and experience with these new components wasn't a given among the operations teams. HUBER's service and support teams provided comprehensive training that included tips on early recognition of issues and ways to reduce maintenance and repair costs. The North Las Vegas team was eager to learn from the HUBER service team and became adept at good maintenance procedures. This is exactly what HUBER intended since the service team's mantra is to share its knowledge so that clients can take good care of their equipment and perform much of what they would make service calls to address.

HUBER serves the municipal and industrial wastewater treatment market with high quality liquid-solid separation technology. HUBER Technology offers the complete chain of screening, grit and sludge handling processes. The company is an original source manufacturer specializing in stainless steel fabrication of technologies for water and wastewater with proven experience and expertise with over 40,000 installations worldwide.