



Headworks Bar Screen's Lower Sprocket Design Is Once Again the Gold Standard

Introduction

Gold Bar Wastewater Treatment plant is located in Edmonton, Canada, is owned and operated by EPCOR Water Services Inc. EPCOR is one of the largest privately regulated water providers in Canada, servicing over 1 million people in over 85 western Canadian communities and industrial sites, as well as many people in various parts of the United States.

With an overall plant treatment design capacity of 310 million liters per day flow and a peak primary treatment capacity of 910 million liters per day, the Gold Bar plant is one of the largest Class IV treatment plants in the region. Gold Bar treats more than 100,000 million liters annually – enough to fill an Olympic-size swimming pool more than 110 times a day. Its screening and grit removal facility handles a combined flow of 1600 million liters per day. With more and more utilities diverting their flow to the plant, EPCOR wanted reliable heavy duty screens to replace their existing screens, but with a higher rate of screening out the debris coming in with the flow of liquids.

Challenge

As we've heard before from potential customers, due to problems with competitors' equipment, the plant operators were initially



Customer: EPCOR Water Services Inc.
Industry: Wastewater Treatment Plant

KEY FACTS

MS Bar Screens installed in 2012

- **Peak Flow:** 310 million liters per day (81.9 MGD)
- **Size:** 8.8 m long (approx. 30 ft)
- **Weight:** 5.5 tons
- **Channel Width:** 2.34 m (approx. 8 ft)

skeptical about the idea of purchasing bar screens with lower sprockets. This skepticism was understandable given historical operational experiences with conventional catenary screen sprocket designs by others which created high maintenance costs and lots of downtime. The Gold Bar operators were then introduced to the Headworks revolutionary lower sprocket design which makes lower sprocket maintenance a thing of the past.

The stub shaft and sprocket are precision machined from high quality stainless steel and the added protection of a ceramic bearing is press fit tightly onto the stub shaft. Tolerances are so tight that intrusion of grit is negligible and corrosion is nonexistent. The ceramic material we use at Headworks is also utilized in a wide variety of applications due to its excellent corrosive and abrasive wear characteristics. The whole unit is designed to be recessed into the screen's side frame, so it does not directly experience the direct incoming flow. The end result is a maintenance-free design with years of successful operation.

Design

In 2011, after consulting with Stantec Engineering and diligently researching several of Headworks' bar screen installations in Canada and the USA, EPCOR elected to proceed with a multi-rake bar screen with a lower sprocket design. In the spring of 2012, three massive Headworks Bar Screens went into operation at the plant, each screen weighing over 5.5 tons with an overall length of 8.8 meters (approx. 30 ft) and a channel width of 2.34 meters (approx. 8 ft) designed to handle peak flows of 310 million liters per day.

Operators and Maintenance Staff at Gold Bar working around the Headworks Bar Screens have come to recognize the benefits of having our sprocket design and a chain guided mechanism installed at their plant. The sprocket and guided chain mechanisms cause each passing rake to firmly engage into the screen field right from the bottom of the channel to the very top of the screen field. Many competitor screens do not have this guided chain design, meaning that the rakes have to

depend on gravity to engage properly in the screen field. With a screen incline of 75 degrees and higher, this is hard to achieve and the lower portion of the screen field is often left unscreened, thus reducing hydraulic throughput and causing at least partial screen blinding.

With such large flows coming from various communities, the Gold Bar plant cannot afford to lose hydraulic efficiency due to any kind of blinding. This means that the accumulation of trash on the screen field bars must be cleaned at a very fast rate with all rakes engaging all along the entirety of the screen field. With the added benefit of Headworks' patented self-cleaning mechanism, the screens routinely have cleared jam conditions automatically, allowing the Gold Bar operation staff to spend their time working elsewhere. By not "flexing-over" or "skipping over" an obstruction as some competitor equipment is designed to do, the rakes clean the whole screen field area, even when in a jam clearing mode.

This success story at Gold Bar WWTP is yet another testimony to the proven track record of Headworks' commitment to the highest quality engineering and manufacturing standards.



Headworks Bar Screen installed at the Gold Bar Wastewater Treatment Plant, Edmonton, Canada