

MONTERREY, MEXICO

PROJECT-AT-A-GLANCE

Duperon FlexRake[®] equipment is first line of defense for both large and small debris, improving plant operations, worker safety and environmental compliance in Monterrey, Mexico.

SITE: *Dulces Nombres Wastewater Treatment Plant*

EQUIPMENT: *Four (4) Duperon[®] FlexRake[®] GTS*

INSTALLED: *October 2020, December 2020*



INTRODUCTION

Monterrey, Mexico is the capital and largest city in the northeastern state of Nuevo León, with a population of more than 5.3 million. The city and its environs are home to many of Mexico's leading business and industrial enterprises, from petrochemical companies to beverage producers to technology companies. Servicios de Agua y Drenaje de Monterrey (SADM) provides complete water services, from collection, purification, distribution, collection of wastewater, wastewater treatment and distribution of treated water, to the entire population of the State of Nuevo León.

A core SADM asset is the Dulces Nombres wastewater treatment plant. Built in 1996, and currently serves the municipalities of Monterrey, San Nicolás, Guadalupe, Santa Catarina, San Pedro Garza García and Juárez. The plant processes more than 7,500 liters per second (171 million gallons per day), making it one of the largest wastewater treatment plants in Latin America. Plant processes comprise of pre-treatment, primary settling, biological treatment via conventional aeration tank, and disinfection.

THE PROBLEM

The flow entering the plant includes large amounts of fiber material that impacted the performance of downstream equipment. But large debris is an even bigger problem. The plant's service area includes canals that carry a wide range of bulky objects to the plant—from vehicle tires and tree trunks to dead livestock.

The plant was equipped with two different types of influent screening systems. One system had vertical screens and a single articulating arm to sweep debris from the screen. The other system was a chain and sprocket bar screen with an axle in the bottom of the screen.

Large incoming debris frequently damaged these grids and caused blockages, disrupting plant operations. This required staff to enter the influent channel multiple times a week to clear debris or repair equipment. This was a hazardous confined space entry, as the deep and narrow (7 meters high x 2 meters wide) channel harbored dangerous H₂S gas.



THE SOLUTION

Dulces Nombres plant management evaluated a number of possible solutions, ultimately selecting the Duperon® FlexRake® automated bar screen. Decision-makers particularly recognized the advantages of Duperon's FlexLink™ design—the toughest link system in the industry, rated at 60,000 pounds—and Jam Evasion Technology™. When large debris contacts the screen, the lower portion of the FlexRake pivots out to accommodate the object and transfer it upward, without causing a jam or requiring operator intervention. Tear-shaped bars provide 20% to 50% greater hydrodynamic efficiency than typical bar designs. Duperon's unique Thru-Bar™ scrapers clean three sides of the bar, as well as cross members.

The FlexRake was determined to be the most efficient solution evaluated. The FlexRake's more than 25-year application history, installed base of nearly 2,000 units and providing effective solutions at each of those installation sites, and the expertise and responsiveness of the Duperon engineering team also factored into the purchase decision.

Dulces Nombres purchased four FlexRake GTS (Global Technology Screen) fine screening units designed to remove solids larger than 1 cm (3/8 inch). The installed unit is 10 meters (32.8 feet) and 11 meters (36.1 feet) high, reaching to the bottom of the influent channel, and is constructed of 304 stainless steel for long life and low maintenance.

“The FlexRake routinely removes in 10 days the amount of debris that would have been removed in a month using the old screen systems.”

THE RESULTS

After nearly a year of continuous, 24x7 operation, the FlexRake has delivered on its promises, successfully addressing the plant's requirements for efficient and safe operation.

The FlexRake routinely removes in 10 days the amount of debris that would have been removed in a month using the old screen systems. Plant operators are able to modify the speed of the FlexRake operation in response to varying influent flow and level. This helps optimize efficiency and reduce maintenance and wear and tear on components in contact with debris.

The FlexRake effectively prevents solids larger than 1 cm from entering the pretreatment stage, protecting the vortex sand separators as well as downstream assets. In fact, since the FlexRake was installed, plant processes have not been interrupted due to damage caused by debris.

This effective performance has meant plant operators have not had to enter the influent channel or other high-risk areas to clear blockages or perform repairs. The result is a safer workplace.

The FlexRake has also helped the Dulces Nombres plant comply with environmental regulations. By removing more debris, the FlexRake has dramatically improved the quality of the treated water.

ABOUT DUPERON

Duperon Corporation is the leader in innovative preliminary liquid/solids separation systems. For more than 35 years, Duperon has provided simple yet innovative solutions for a variety of screening and solids handling applications in the water and wastewater industry. Duperon technologies are designed and manufactured in Saginaw, Michigan.