

# C A S E S T U D Y

## A Reliable Wastewater Treatment Solution for Government Properties

### CHAOYANG ENVIRONMENTAL BUILDING, CHINA

**Problem** In Beijing, China, the Chaoyang District Environmental Center was building an office that could accommodate about 150 staff members. The building would need a reliable wastewater system that could treat effluent to reuse standards while minimizing on-site odor.

**Solution** The local project manager recommended an AdvanTex® AX-Max™ Treatment System by Orenco Systems. The AX-Max has excellent processing capacity, costs little to operate, and doesn't require a full-time operator. Also, treated effluent from the AX-Max can be used for washing vehicles and for landscape irrigation, as allowed by local regulations.

### AdvanTex AX-Max Checks All the Boxes

The Chaoyang District Environmental Center was planning an office building for about 150 workers that would include large cleaning bays for sanitation vehicles. Wastewater sources at the building would include toilets and sinks from bathrooms and a kitchen. The project manager hoped to find a wastewater treatment system that could produce high-quality effluent that was suitable for reuse in vehicle washing.

Suppliers offered several different treatment options, including an AdvanTex AX-Max Treatment System from Orenco. The project team researched what was available, comparing and contrasting the various features. In the end, they chose the AdvanTex system because it offers all of the following benefits:

- 24-hour operation with minimal noise or odor
- No chemicals needed in the treatment process
- Superior effluent that surpasses discharge standards
- Low energy usage and low operating cost
- Reliable, almost maintenance-free operation



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Without the use of chemicals, the AdvanTex AX-Max Treatment System produces effluent that meets strict discharge standards, even when flows are variable. And it does so with minimal noise or odor.

### Commercial — Government Market

#### Project Overview

#### BEIJING, CHINA



#### Design Parameters

- Multi-use office building for 150 workers
- 18 m<sup>3</sup>/day (4755 gpd) average flow
- 30 m<sup>3</sup>/day (7925 gpd) capacity

#### Treatment Requirements

- 20 mg/L BOD<sub>5</sub>
- 40 mg/L TSS
- 50 cfu/100mL fecal coliform

#### Effluent Quality\*

- 3.9 mg/L BOD<sub>5</sub>
- < 5 mg/L TSS
- 0.5 mg/L NH<sub>3</sub>
- 2.3 mg/L TN
- 7.5 pH
- 33 cfu/100mL fecal coliform

#### Start-Up Date

- May 2021

#### Primary Treatment

- Two-chamber concrete tank
- Primary septic chamber: 57.5 m<sup>3</sup> (15,200 gal)
- Pre-anoxic chamber: 41.5 m<sup>3</sup> (11,000 gal)

#### Secondary Treatment

- AdvanTex AX-Max Treatment System (AX-Max 225-35)

#### Tertiary Treatment

- Micron filtration
- UV disinfection

#### Reuse Applications

- Vehicle washing
- Landscape irrigation

\*Samples collected and analyzed by a third party between 5 June 2021 and 19 April 2022.

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**CHAORYANG ENVIRONMENTAL BUILDING, CHINA**

With Orenco's technical support, construction of the treatment facility and installation of the AX-Max system took three workers just one month to complete. And even though pandemic travel restrictions prevented Orenco personnel from being on-site to help with the start-up, AX-Max technology is so user-friendly that local workers were able to get it up and running themselves while Orenco experts offered online support from 5,000 miles (over 8,000 km) away.

Following treatment by the AdvanTex AX-Max, effluent is kept in a storage basin and used for both vehicle washing and landscape irrigation. A DuraFiber™ building by Orenco Composites™ is also part of the facility and securely houses an Orenco Controls™ TCOM™ control panel and a HACH SC200 unit for monitoring pH levels and turbidity.

This was Orenco's first project in China, and it's been an all-around success. Although many kinds of wastewater treatment systems are available in Beijing, none can offer all the benefits of the AX-Max for such a low operating cost. The AdvanTex system has solved the problem of wastewater treatment for the Chaoyang environmental building and laid a firm foundation for Orenco to serve more customers throughout the area.



**Commercial — Government Market**

**Monitoring and Control**

- Orenco TCOM™ control panel
- HACH SC200 (monitors pH levels and turbidity)

**Operation and Maintenance**

- Only a part-time operator needed



A DuraFiber building by Orenco Composites is also part of the facility and securely houses the TCOM control panel.

*“Before installation, we had some doubts about [the AX-Max system], but after six months of operation ... the effluent meets Beijing’s strictest discharge standards. Even if the flow is variable, the AX-Max can maintain the same level of treatment ... and operation and maintenance are so simple that the system doesn’t need permanent staff.”*

– Chaoyang District Environmental Center

Treated effluent from Orenco's AdvanTex AX-Max Treatment System is so clean that it's being used for vehicle washing and landscape irrigation.

A spokesperson for the Chaoyang District Environmental Center said, “This is the first time we’ve seen such a unique and durable wastewater treatment system. Before installation, we had some doubts about it, but after six months of operation (and without the use of any chemicals), the effluent meets Beijing’s strictest discharge standards. Even if the flow is variable, the AX-Max can maintain the same level of treatment. Not only have we been pleased with the treatment, but we’ve also noticed there are no problems with noise or odor that might disturb anyone. And operation and maintenance are so simple that the system doesn’t need permanent staff. As it turns out, the Orenco AX-Max was a smart choice.”

*All product and performance assertions are based on proper design, installation, operation, and maintenance according to Orenco's current published documentation. Data used by Orenco to derive the representations and conclusions contained within this Case Study were current as of September 2022.*

For information about Prelos™ Sewer, AdvanTex® Wastewater Treatment, or Orenco Controls™, contact Orenco Systems®, Inc.



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