

Case story

Danfoss APP pumps provide **pressure** – and **profits** – at Chinese wastewater treatment plant



90%
energy efficiency

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Wastewater treatment is increasingly in focus in China, especially after new legislation designed to combat high pollution levels was passed in 2015. Although a wide variety of technologies are used across China, RO technology has high potential in the wastewater treatment market because it occupies a sweet spot in balancing treatment speed, capacity, and cost. In this case, we learn how a Build-Operate-Transfer (BOT) project in Inner Mongolia used Danfoss APP technology to treat industrial wastewater – and make a profit.

The challenge: Ensure the profitability of a BOT wastewater treatment facility

Beijing Tiandiren Environ-Tech Company Limited (TDR) won the bid to build a new 6000 m³/day wastewater treatment facility for an industrial park in Ordos, Inner Mongolia, as a BOT project that would later be handed over to the local government.

The BOT contract was based on volume. TDR is paid a fixed rate per m³ of treated water, so their commercial goal is to treat water according to the agreed-upon criteria as cost-efficiently as possible.

Pump efficiency has, of course, a huge impact on the costs of RO wastewater treatment,” says Obama Sun, general manager at Beijing C.I.I.T. Environmental Co. Ltd, the Danfoss distributor who supplied the pumps. “When we calculated the total costs for the BOT period, electricity costs to run the high-pressure pump were obviously critical, but pump maintenance expenses were also an important cost driver. That’s why we put particular importance on a high-pressure pump solution that would ensure the highest profitability for the entire BOT period.”

The solution: Four Danfoss APP 30 pumps deployed in two trains

After investigating its options, TDR decided to build the plant around four Danfoss APP 30 pumps supplied by Beijing C.I.I.T. Environmental Co. Ltd. The system runs with two pumps in two parallel trains, an advantage if one of the pumps or trains should ever need service.

The plant was completed in 2015. The delivery of the pumps was on schedule and installation was straightforward.

The results: Three years with minimal maintenance and reliable project profit

The pumps were designed to run without service for 8,000 hours (or approximately one year of 24/7 operation). Since installation, the two Danfoss trains have run nearly around the clock.

“These APP pumps are very efficient,” explains Sun, “approximately 90%, so the BOT partner’s energy costs have been low as expected. But these pumps are also extremely dependable. In the three years since installation, only one service call has been necessary.”



RO plant with two trains - each using two APP 30 pumps

“The industrial park is happy because wastewater is treated according to agreed standards. The BOT partner is happy because profits have been predictably good. And we’re happy because it has been demonstrated that APP technology has the potential to enable similar business cases for other wastewater treatment plants throughout China. We look forward to introducing similar solutions to potential partners.”



Danfoss high-pressure pump APP 30

About Beijing Tiandiren Environ-Tech Company Limited:

With more than 300 employees, Beijing Tiandiren Environ-Tech Company Limited (TDR), specializes in high-concentration wastewater treatment and specialized material separation technologies. With its strong R&D capabilities, rich human resources, and consistent support from capital markets, TDR embraces the values of pragmatism, innovation, integrity, and efficiency. It continues to pursue its mission to be the most professional and trustworthy enterprise in the water treatment industry.

For more information, see www.dtro.com.cn

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