

# Bei Xiao He Sewage Treatment Plant, Beijing, China

## Challenge

The Bei Xiao He Sewage Treatment Plant was built in the 1980's with a capacity of 40 ML/d in order to cater for the Beijing Asia Games. Since that time, urbanization has increased the demand on the plant. The 2008 Olympic Games in Beijing created the need to significantly upgrade the existing facility. Treated water from the upgrade plant had to be suitable for use in water features (an important requirement for the games) and agriculture.

The technology used for the upgrade had to have a small footprint due to the limited space available for expansion. It also was required to be environmentally friendly due to the overall nature of the Olympic village.

## Solution

Memcor Membrane Bio reactor (MBR) technology was chosen due to its high quality output water and its small footprint. The addition of the MBR raises the plant's output by 60 ML/d to a total of 100 ML/d.

In addition the plant includes a Reverse Osmosis (RO) system built by Siemens to produce 10 ML/d of high purity water.

| Snapshot     |  |
|--------------|--|
| Location     | China  |
| Source       | Raw Municipal Effluent                                   |
| Application  | Municipal Reuse  |
| Technology   | Membrane Bioreactor & RO                                 |
| Capacity     | 60 ML/d MBR, 10ML/day RO<br>(Total WWTP flow = 100 ML/d) |
| Commissioned | 2008   |

The entire expansion was overseen by the Beijing Drainage Group.



The MBR Plant

Memcor® Membrane Systems

Water Technologies

SIEMENS

| Operational Data  |         |
|-------------------|---------|
| Number of cells   | 8       |
| Modules per cells | 608     |
| Total capacity    | 60 ML/d |

Uses automated Maintenance Clean and Clean in Place (CIP) procedures to keep the membranes operating at optimum efficiency.

### Results

Screened feed is first delivered to an anoxic zone and mixed with a recycle mixed liquor stream. This mix is then sent to the aerobic zone before being lifted into a feed channel for distribution to the bank of Membrane Operating Systems (MOS) housing the membrane filters.

Each MOS operates in the same manner. Feed mixed liquor flows under gravity to each MOS. Feed is distributed to each membrane rack housing a number of membrane modules. Feed combines with a continuous air flow to scour membrane bundles and prevent build up of solids/sludge in the system. A filtrate pump draws the feed water through the Memcor® Ultrafiltration membranes. Residual sludge is recirculated within the plant to the biological stage of the process.



Membrane rack being loaded to an MOS cell

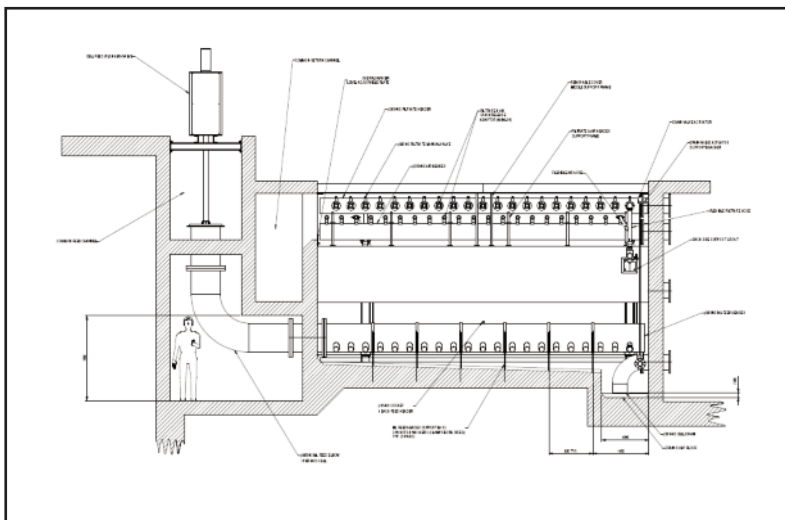


Diagram of Cell Section

### Membrane Solutions

Memcor® membranes from Siemens Water Technologies represent the broadest range of low-pressure membrane filtration products -- submerged, pressurized, large capacity or small systems. They continue to be successfully employed in applications as diverse as wastewater reuse, potable water, RO pretreatment, high solids and sand filter retrofits.

| Memcor® Membranes |              |            |             |               |             |                       |                |               |
|-------------------|--------------|------------|-------------|---------------|-------------|-----------------------|----------------|---------------|
| Product           | Pres-surized | Sub-merged | Water Reuse | Potable Water | High Solids | Sand Filter Retrofits | Large Capacity | Small Systems |
| CP                | ■            |            | ■           | ■             | ■           |                       | ■              |               |
| CS                |              | ■          | ■           | ■             | ■           | ■                     | ■              |               |
| XP                | ■            |            | ■           | ■             | ■           |                       |                | ■             |
| XS                |              | ■          | ■           | ■             | ■           |                       |                | ■             |

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