Tai Po Sewage Treatment Works (Tai Po STW) is a secondary sewage treatment works. It occupies 13 hectares of land and serves a population of 250,000 in Tai Po District, which produces 95,000 m³ of sewage per day.

Tai Po STW is located in Tai Po Industrial Estate. The Works comprises two independent plants, which are Stage VII commissioned in 1979/1983 and Stage IV commissioned in 1996. The total sewage treatment capacity is 88,000 m³ per day. To cope with the rapid development in the District and more stringent effluent discharge standards, the Stage V Phase 1 upgrading project commenced in 2005. The Phase I project includes construction and modification of 8 primary sedimentation tanks, 10 aeration tanks, 20 final sedimentation tanks and sludge thickening and dewatering facilities. This phase will be put into operation by 2010. The installation of an ultraviolet disinfection system and Stage V Phase 2 upgrading project will then follow for completion by 2010 and 2013 respectively. Upon completion of the whole Stage V project, the STW will be able to treat a maximum sewage flow of 120,000 m³ per day.
Secondary (Biological) Treatment

In aeration tanks, compressed air is fed continuously to provide oxygen essential to sustain the growth of micro-organisms (activated sludge), which will assimilate pollutants in the sewage. The retention time is about 9 hours.

Screening and Degritting

Sewage arriving at the Inlet Works is preliminarily treated by mechanical bar screens to remove solids exceeding 12 mm. After screening, the sewage is directed to detritors for grit removal.

Primary Sedimentation

In primary sedimentation tanks, about 50% of the suspended solids in the preliminarily treated sewage are settled out and removed as primary sludge by sludge scraping mechanisms.

Secondary (Biological) Treatment

In aeration tanks, compressed air is fed continuously to provide oxygen essential to sustain the growth of micro-organisms (activated sludge), which will assimilate pollutants in the sewage. The retention time is about 9 hours.

Final Sedimentation

Treated sewage and activated sludge are separated in the final sedimentation tanks. A controlled portion of the activated sludge is fed back to the aeration tank to maintain adequate micro-organism population for biological treatment. The remaining portion (Surplus Activated Sludge, SAS) is thickened to reduce volume before treatment in the sludge digesters.
Sludge Digestion

The primary sludge and thickened SAS are pumped into sludge digesters for anaerobic digestion. Biogas containing methane, which is a renewable energy, is produced during the digestion.

Sludge Dewatering

Digested sludge is dewatered to a minimum dryness of 30% by filter presses to reduce water content and volume before landfill disposal.

環境保護 Environmental Protection

吐露港經處理排放水輸送計劃是將大埔及沙田污水處理廠經二級處理的排放水經直徑3.2米，長7.4公里的輸水隧道及啟德明渠輸送到維多利亞港排放，以協助解決八十年代吐露港的紅潮問題。自一九九八年計劃全面實施後，吐露港的水質有明顯的改善。

在厭氧消化的過程中所產生的沼氣，會用作燃料來產生熱能以維持污泥消化過程所需要的溫度。它更會被用來發動鼓風機去驅動鼓風機，以達至節能減碳的目的。本廠裝了兩台雙燃機驅動的鼓風機和三台熱水鍋爐。

為改善附近居民的生活環境及提供更優質的服務，本廠安裝了一系列除味設施，以配合已實施的氣味管理系統。

Tolo Harbour Effluent Export Scheme (THEES) helps to solve the red-tide problem in Tolo Harbour in the 80’s by conveying the treated effluent from Tai Po and Shatin Sewage Treatment Works to Victoria Harbour via a 3.2 m diameter, 7.4 km long tunnel and Kai Tak Nullah. The water quality in Tolo Harbour has shown encouraging signs of improvement since the full implementation of the scheme in 1998.

Biogas, containing methane, is produced during the anaerobic digestion process. To achieve energy saving, it is used as fuel to produce heat for maintaining the required temperature of the anaerobic digestion process. The biogas is further used by dual fuel engine driven air blowers to provide the required compressed air to aeration tanks. There are two dual fuel engine driven air blowers and three hot water boilers at Tai Po STW. To act proactively in an environmental manner and to provide a better service to nearby residents, an odour management system with deodourizing facilities has been put into operation.
Sewage Treatment Process Flowchart

Key Parameters of Treated Effluent

<table>
<thead>
<tr>
<th>参数 (Key Parameters)</th>
<th>排放標準 (Discharge Standards)</th>
</tr>
</thead>
<tbody>
<tr>
<td>設計流量 (Design Flow)</td>
<td>每日 88,000 立方米 (m³/day)</td>
</tr>
<tr>
<td>總懸浮固體 (Total Suspended Solids)</td>
<td>≤30 毫克/升 (mg/L)</td>
</tr>
<tr>
<td>五天生化需氧量 (5-day Biochemical Oxygen Demand)</td>
<td>≤20 毫克/升 (mg/L)</td>
</tr>
<tr>
<td>總氮 (Total-Nitrogen)</td>
<td>≤25 毫克/升 (mg/L)</td>
</tr>
</tbody>
</table>

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