

## Application of MBBR Technology In Water reuse project

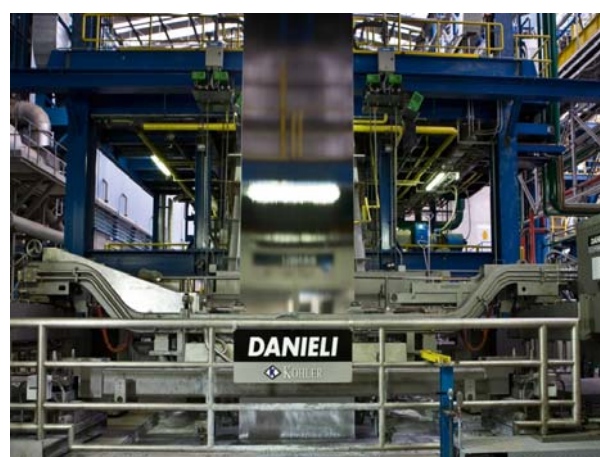


<b>Case study</b>	Municipal Wastewater
<b>Start Up</b>	May 2016
<b>Capacity</b>	20000 m <sup>3</sup> /d
<b>Location</b>	Iran

### Overview

This is the first large water reuse project in Iran, the first project which use the waste water as steel production water source, the whole water supply system of the factory not need to use any fresh water.

We cooperated with DANIELI, and provide the MBBR process package and technology service.



### Challenge

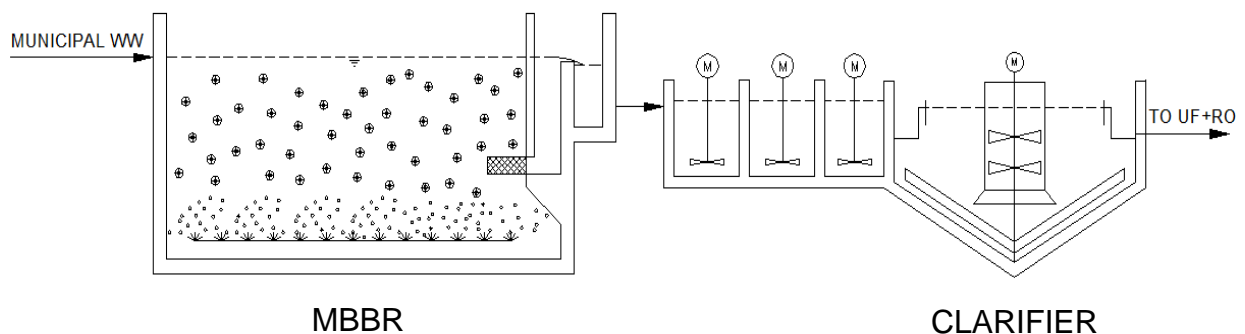
This WWT plant design capacity is 860 m<sup>3</sup>/h, it is the municipal waste water, the Inlet and MBBR outlet values as follows:

Parameter	Unit	Inlet values	Outlet values
COD	mg/L	80~250	<50
BOD <sub>5</sub>	mg/L	40~150	<10
NH <sub>4</sub> -N	mg/l	0.1~50	<5

### Solution

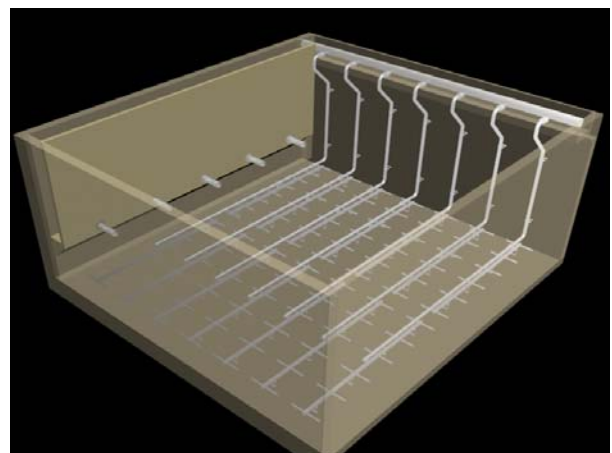
The treatment process is **MBBR+UF+RO**, and provide a new solution for the severe water shortage problem in Iran.

The main characteristic of Moving Bed Biological Reactor (MBBR) configurations is that there is no sludge recycle from a secondary clarifier. MBBR is essentially a simple, once-through process, where all of the biological activity takes place on the biomass carriers. MBBR is usually followed by a solids separation system such as a secondary clarifier or DAF, in order to separate bio-solids produced in the process from the final effluent. The main advantage of MBBR is robust and simple reduction of soluble pollutants (soluble BOD or COD,  $\text{NH}_4^+$ , etc.), with minimal process complexity, utilizing.



### **Proposal**

There are two sets of parallel operation MBBR tanks, each tank has seven sets aeration pipe, of which from one to six sets are the same, the rest of the final set near the media retention screen be added more areator, in order to prevent the media pilling up on the screen.

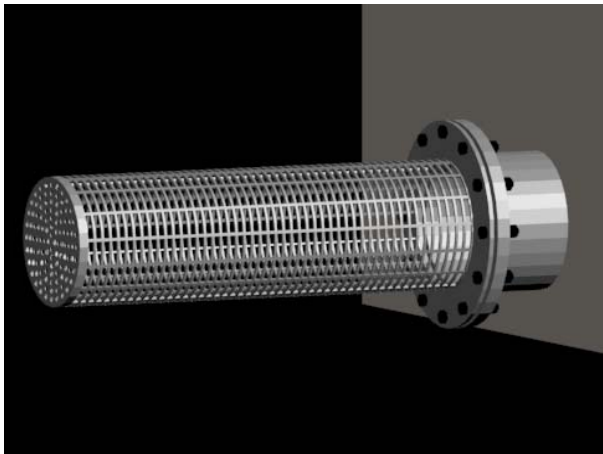


### **BioCell Media**

Media provides two important functions: The protected internal surface area allows biofilm to attach while supporting either the heterotroph / autotroph bacteria. Second, the millions of pieces of media act as a shearing device on the coarse air bubble to maximize oxygen transfer.

### **Aeration Pipe**

A stainless steel coarse bubble aeration system is employed to mix the suspended media evenly throughout the reactor while providing the mixing energy required to slough old biofilm from the internal surface area of the media and maintain the dissolved oxygen required to support the biological treatment process.



### **Media Retention Screen**

Stainless steel wedge wire screens retain the cultivated biofilm / media in a process-designated reactor while allowing the treated wastewater and sloughed biofilm to flow through to the next treatment phase.

### **Results**

The whole project implemented successfully, to be well received by the general contractor and the owner.

The COD value of the effluent is below 30mg/l, keep a long term and stable run.