

CATALOGUE
2018



STAY
FOCUSED
STRIVE FOR
SUCCEED

DESIGN
INTEGRATE
BUILD
DELIVER



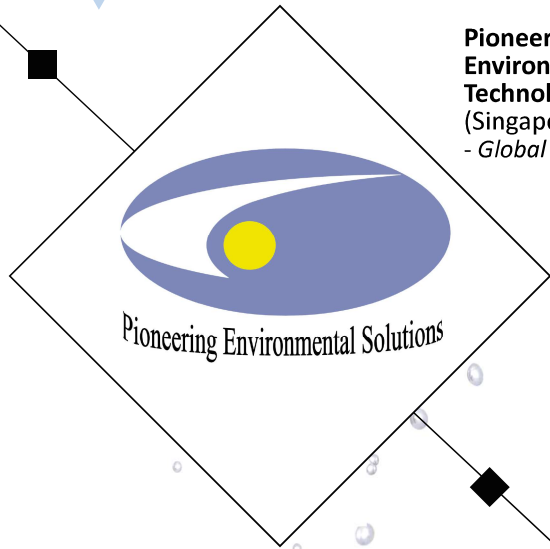
**PIONEER ENVIRONMENTAL
TECHNOLOGY PTE LTD**

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PIONEER ENVIRONMENTAL TECHNOLOGY PTE LTD

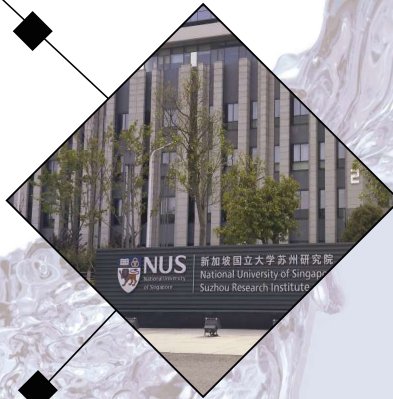
A Subsidiary of AnnAik Limited

Our Structure



Pioneer Environmental Technology Pte Ltd
(Singapore)
- Global Headquarter

Suzhou Pioneer Environmental Technology Co. Ltd
- China Headquarter



Wuhan Pioneer Environmental Technology Co. Ltd (China)
Specialist in Wastewater Analysis and On-line Detection

Our Services

Pioneer Environmental Technology

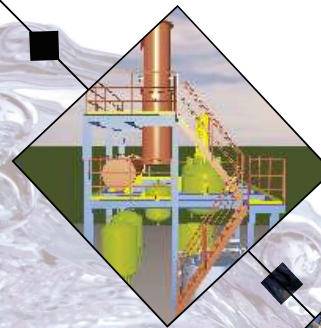
- ◆ Design & Engineering
- ◆ Water & Wastewater Technology and Solutions

Pioneer Environmental Technology Pte Ltd, based in Singapore, has the objective to be the regional leader in providing environmental solutions with our own patented technology and manufacturing base in China and Singapore.

Pioneer is very well positioned to provide unique designs and sophisticated turn-key systems to the water management and chemical industries.

DESIGN, INTEGRATE, BUILD & DELIVER

- ◆ Environmental consultancy work
- ◆ Turn-key water treatment & recovery systems
- ◆ Environmental equipment and consumables



We Design

We Integrate

We Build

We Deliver

Our Systems & Technology

Integrated System for Treatment & Recycle of Wastewater with High COD, High Salts and High Volatile Organics

In principle, there are only two types of COD:

VOLATILE

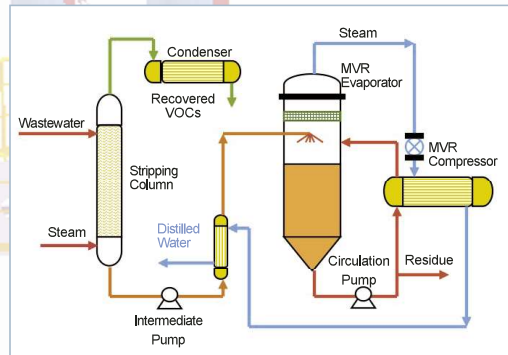
The volatile organics can be removed by stripping column, in which the volatile compounds are stripped off by steam, condensed and recovered;

NON -VOLATILE

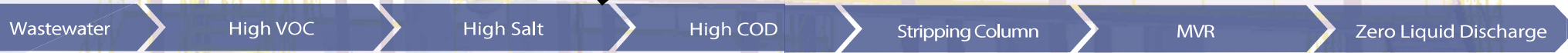
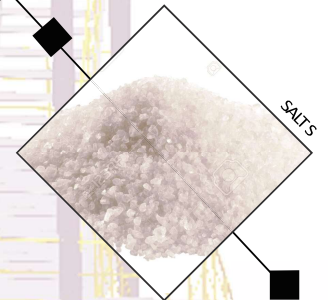
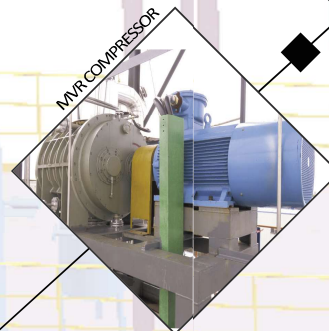
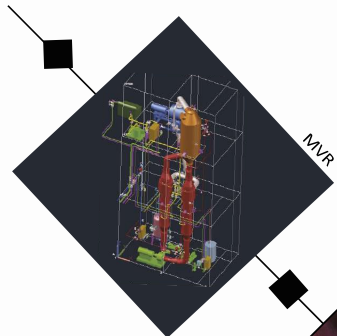
The non - volatile organics and salts can be separated by evaporation or MVR (Mechanical Vapor Re-compression) process; in which the vapor is re-compressed to generate steam with high temperature and pressure. Therefore, the heat content for the vapor is recycled and reused.

Via integrated process of stripping column and MVR, most of the COD and salts can be separated from water. The purified water is then treated by P/C treatment or biological process to meet discharge limits or to be recycled.

Zero liquid discharge can thus be achieved for the difficult-to-treat wastewater.



China Patent 201610357093.2 (Invention)

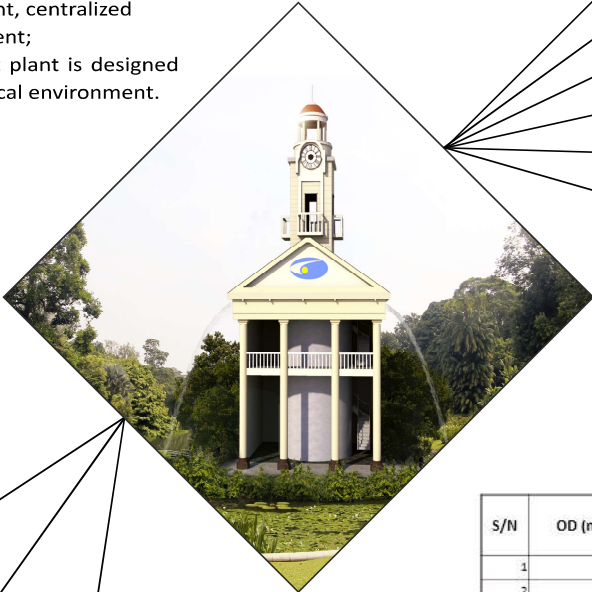


Our Systems & Technology

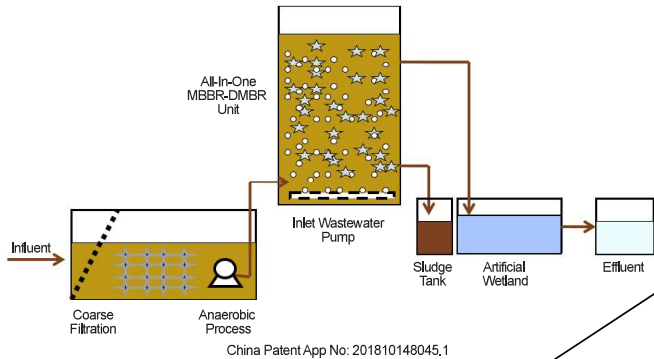
All-In-One MBBR-DMBR Decentralized Wastewater Treatment System

- ◆ Standardized equipment for easy fabrication, installation, operation and maintenance;
- ◆ Unit capacity: 5-500 m³/d;
- ◆ Less land space and energy consumption than that for conventional process;
- ◆ Fully automatic for less manpower requirement;
- ◆ Decentralized treatment, centralized and remote management;
- ◆ Wastewater treatment plant is designed to integrate into the local environment.

- ◆ System Monitoring
- ◆ Remote Operation
- ◆ Remote Maintenance
- ◆ Operation Data Storage
- ◆ Water Quality Monitoring
- ◆ Alarm System



All-In-One MBBR-DMBR Decentralized Wastewater Treatment System



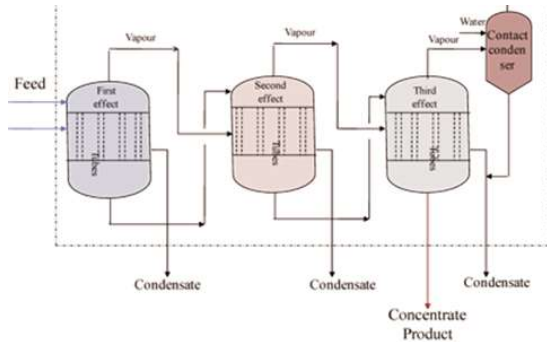
Parameters for the All-In-One WWTs

S/N	OD (m)	ID (m)	Height (m)	Footprint (m ²)	Treatment Capacity (m ³ /d)
1	0.76	0.56	6.50	8.00	5
2	1.00	0.80	6.50	8.00	10
3	1.20	1.00	6.50	12.00	15
4	1.34	1.14	6.50	12.00	20
5	1.48	1.28	6.50	14.00	25
6	1.60	1.40	6.50	16.00	30
7	1.72	1.52	6.50	16.00	35
8	1.82	1.62	6.50	18.00	40
9	1.92	1.72	6.50	18.00	45
10	2.02	1.82	6.50	24.00	50
11	2.20	2.00	6.50	24.00	60
12	2.36	2.16	6.50	28.00	70
13	2.50	2.30	6.50	32.00	80
14	2.64	2.44	6.50	38.00	90
15	2.78	2.58	6.50	40.00	100
16	3.35	3.15	6.50	55.00	150
17	3.84	3.64	6.50	70.00	200
18	4.28	4.08	6.50	90.00	250



Our Systems & Technology

MEE – Multi Effect Evaporator



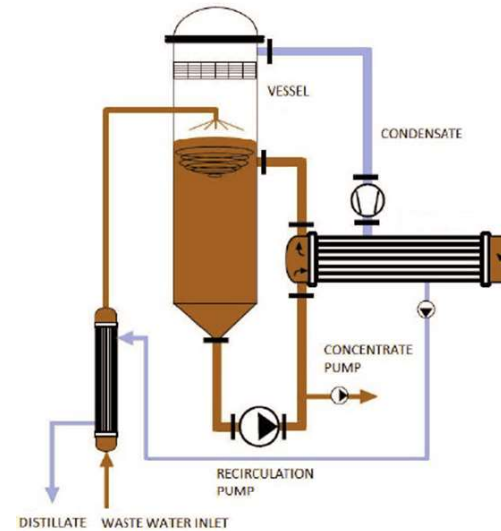
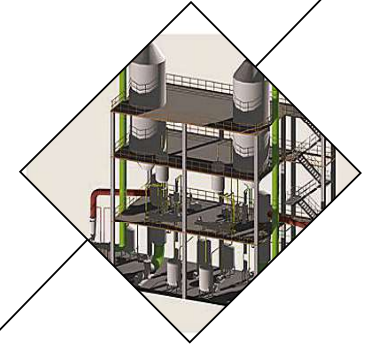
System Introduction:

Multiple-effect evaporation is widely-used system, which utilizes the heat from secondary steam multiply. It is a traditional and reliable evaporation technology. Combined with different kinds of gas-liquids separator, crystallizer, it can realize the concentration and crystallization of different materials, and meet different processing demands.

Product Features:

- ◆ Utilize the secondary steam reasonably, to save more energy and be more economical.
- ◆ Multiply processing design, can choose most suitable feeding and discharging type based on material characteristics
- ◆ Less investment compared with MVR evaporation system

MVR – Mechanical Vapor Recompression



System Introduction:

Mechanical Vapor Compression (MVC) is the evaporation method by which a compressor is used to compress and thus increase the pressure of the steam produced. Since the pressure increase of the steam also generates an increase in the steam temperature, the same steam can serve as the heating medium for the liquid being concentrated from which the vapor was generated to begin with. This makes this evaporation method very energy efficient. When this compression is performed by a mechanically driven compressor, the evaporation process is referred to as MVC (Mechanical Vapor Compression) or MVR (Mechanical Vapor Recompression).

Products Feature:

- ◆ No or few live steam required.
- ◆ Low energy cost, low operation cost.
- ◆ Could combine with crystallizer to form the continue evaporate and crystallization system.
- ◆ Condenser is not needed or just need a small one.

Evaporation

Re-Crystalization

Zero Liquid Discharge

Evaporation

Re-Crystalization

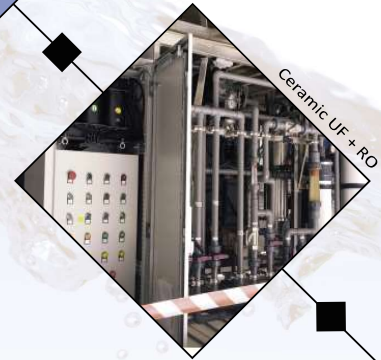
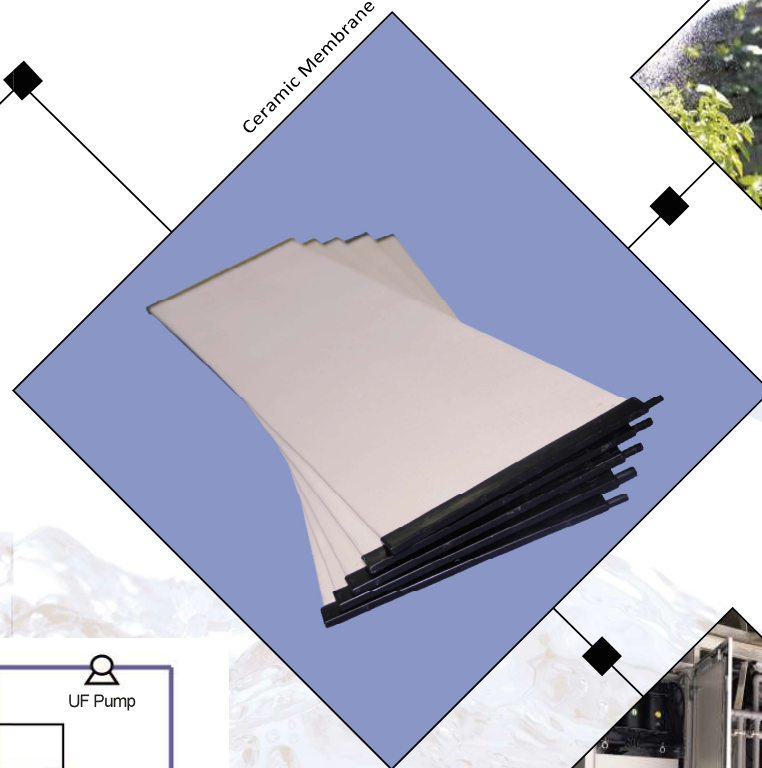
Zero Liquid Discharge

Our Systems & Technology

Integrated Wastewater Treatment and Recycle Plant

Physical - chemical treatment process, biological treatment process, membrane filtration process and RO treatment process are integrated for wastewater treatment and recycle projects.

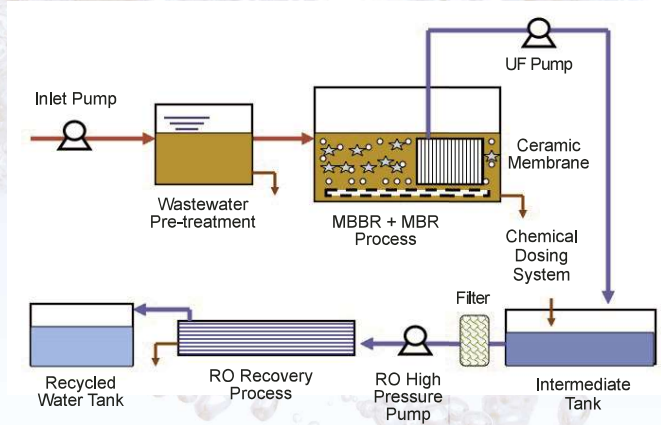
In the physical - chemical treatment process, the suspended solids and large molecules can be removed via coagulation and flocculation process; Dissolved air flotation (DAF) is commonly used as well.



In the MBR or MBBR process, BOD and COD are reduced via biological reaction by the microorganisms.

In the MBR process, the suspended solids are separated from water as well.

Further purification can be achieved by Reverse Osmosis membrane. Purified water is thus obtained and re-used.



Waste Water Pre-treatment

Biological Treatment

Recycle

Re-use