

Polluted Water Treatment System without Chemicals

# Macromolecule Microfilter System

Quick Treatment of Polluted Water

"MIZUKOSHITARO"®

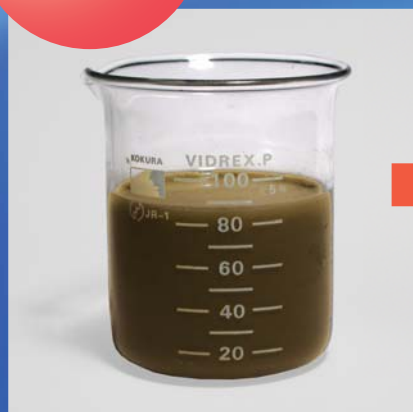
Japan Government <NETIS>

New Technology Information System

Registration Number : No.CG-020011

High Performance Macromolecule Microfilter  
Impurities can be removed without using chemicals

Before Treatment



After Treatment



## Outline of System

- The System provides treatment of polluted water with the macromolecule microfilter.
- Filtration of polluted water can be carried out by static water head.
- The System can improve quality of downstream by enhancing dissolved oxygen content which is formed in Microbubble Unit installed in the System.
- Polluted water can be reused as valuable water resource.

## Advantage

Impurities in the polluted water can be removed by filtration without using any chemical coagulant.

■ Operation Data : Water Quality in Yamaguchi Pref.

	Before Treatment	After Treatment
Turbidity (mg/ℓ)	5 0 2	2
Color	Brown	Transparent
Odor	Slight Odor	Odorless
COD (mg /ℓ)	1 3 8	8. 1 6
BOD (mg /ℓ)	3 3	3
Dissolved Oxygen (mg/ℓ)	4 ~ 5	7 ~ 8

### ● Operation Method

The System can be operated by turning the main switch to ON (or OFF), then the operation switch to AUTO (or MAN) depending on operation mode you select.



### ● Microbubble Unit

The unit can enhance dissolved oxygen content of the treated water which is discharged to the river.



### ● Compact Design

The System is designed to also provide for urgent needs, such as easy transportation, installation and dismantle, therefore, an emergent service for treatment of polluted water can be carried out.

## Application

- Waste water treatment in thermal power plant
- Treatment of waste water discharged in plant maintenance work
- Treatment of polluted water in civil engineering and construction work
- Treatment of waste water polluted with heavy metals
- Treatment of waste water polluted with toxic substances (dioxin, etc.,) in the incineration plant
- Treatment of waste water containing algae formed in lakes and marshes
- Treatment of waste water of industrial plant
- Treatment of river water for agricultural use (Ceramic Filter)

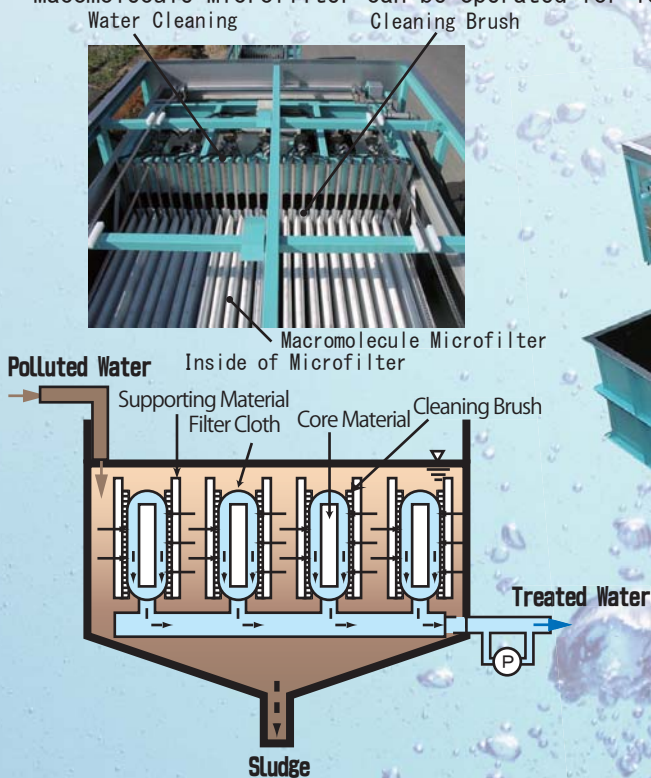


Treatment

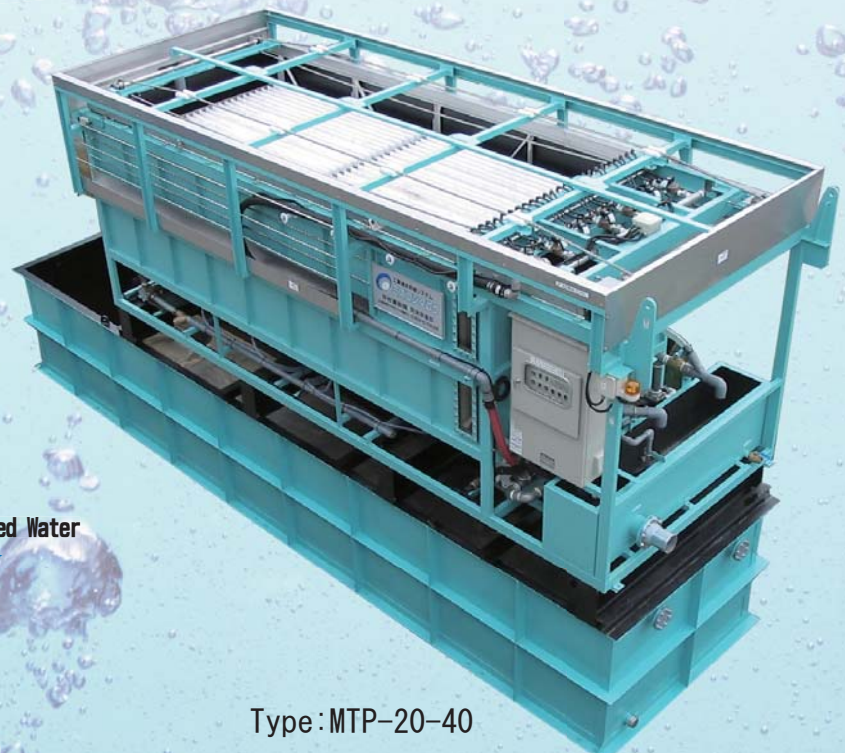
## ★ Macromolecule Microfilter System (MTP Series) ★

Over 5micron sized impurities can be removed with Macromolecule Microfilter without using any chemicals. Macromolecule Microfilter is capable to treat large amount of polluted water while removing fine particle impurities.

Macomolecule Microfilter can be operated for long time by brushing the surface of filter cloth.



Sludge separated from the System can be dehydrated, dried and discharged.



Type: MTP-20-40

Treated Water Storage: available at your option

### ■ Specification

Type	Length (m)	Width (m)	Height (m)	Dry Weight (t)	Treatment	Maximum Capacity (m <sup>3</sup> /hr)	Power Source	Power Consumption (kW)			
								Filtration by static water head	Water Cleaning /h	Pump Capacity (Maximum)	Pump Capacity (70% Loaded)
MTP-40-60	12.85	2.3	2.7	10.0	Type of Filtration (Pump)	40 ~ 60	200/220 (V) 50/60 (Hz)	0	0.6	8.8	6.16
MTP-20-40	6.2	2.3	2.7	5.0		20 ~ 40		0	0.3	4.4	3.08
MTP-10-20	5.9	1.4	2.7	3.5		10 ~ 20		0	0.14	2.2	1.54
MTP-05-10	3.7	1.4	2.7	2.0		5 ~ 10		0	0.07	0.75	0.53

\*The specification may be modified without notice.

\*As weight of the System can be increased after the site operation because of sludge separated from polluted water.

Take care not to overload in case of crane lifting and transportation.

Turbidity Condition : Feed Water 1,000mg/l,  
Product Water 1 ~ 150mg/l

## ★Electrical Coagulation Unit (G-series) ★

A pair of electrode plates are mounted in the unit.  
 Fine impurity particles are flocked and coagulated by metal ions.  
 Various polluted water can be treated by combining with MTP series.



Type G-1



Electrode Plate

### ■ Specification

Type	Length (m)	Width (m)	Height (m)	Dry Weight (t)	Treatment	Maximum Capacity (m <sup>3</sup> /hr)	Power Source	Power Consumption (kW)
G-III	9.5	2.3	2.5	8.0	Electrical Coagulation Method	40 ~ 60	200/220 (V) 50/60 (Hz)	29
G-II	6.1	2.27	2.45	4.5		20 ~ 40		15
G-I	4.4	1.4	2.3	3.5		5 ~ 10		10.5

\*The specification may be modified without notice.

\*As weight of the System can be increased after the site operation because of the sludge separated from polluted water. Take care not to overload in case of crane lifting and transportation.

## ★Dehydration Unit (MTD Series) ★

Polluted water can be separated to the filtrated water and sludge by the Macromolecule Microfilter.  
 Sludge can be dehydrated upto 35-60 % water content and packed in sandbags for further treatment or transportation by truck.



Macromolecule Microfilter

### ■ Specification

Type	Length (m)	Width (m)	Height (m)	Dry Weight (t)	Treatment	Maximum Capacity (m <sup>3</sup> /hr)	Maximum Capacity (m <sup>3</sup> /day)	Power Source	Power Consumption (kW)
MTD-1S	1.8	2.1	2.5	2	Dehydration Method (Pressured with Pump)	0.5 ~ 2	Less than 10	200/220 (V) 50/60 (Hz)	1.6

\*The specification may be modified without notice.

\*As weight of the System can be increased after the site operation because of sludge separated from polluted water.

Take care not to overload in case of crane lifting and transportation.

Turbidity Condition : Feed Water 1,000mg/l,  
 Product Water 1 ~ 150mg/l

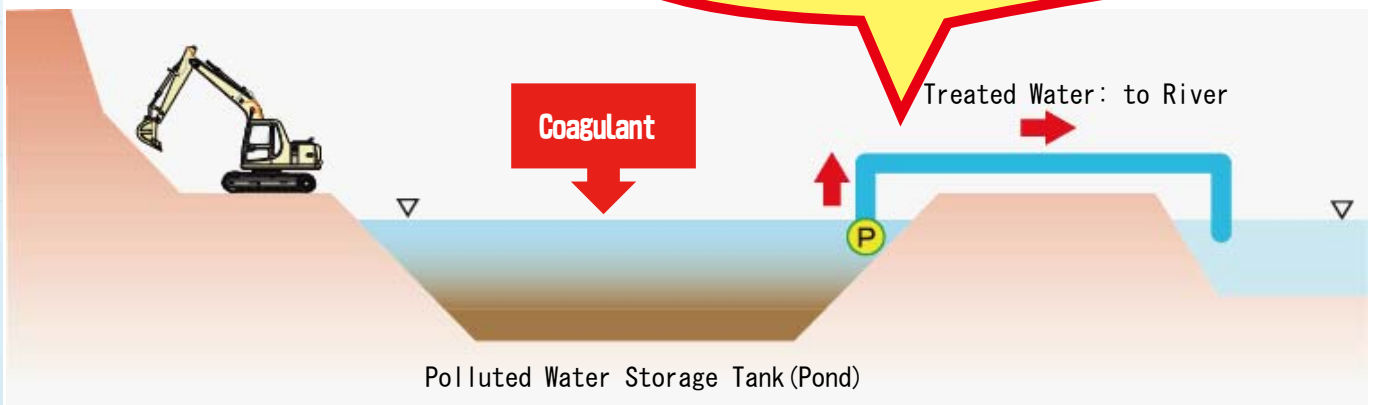
## Comparison with Conventional System

The Macromolecule Microfilter System will not load further pollution control to the environment.

### ★ Conventional Treatment ★

Disadvantage

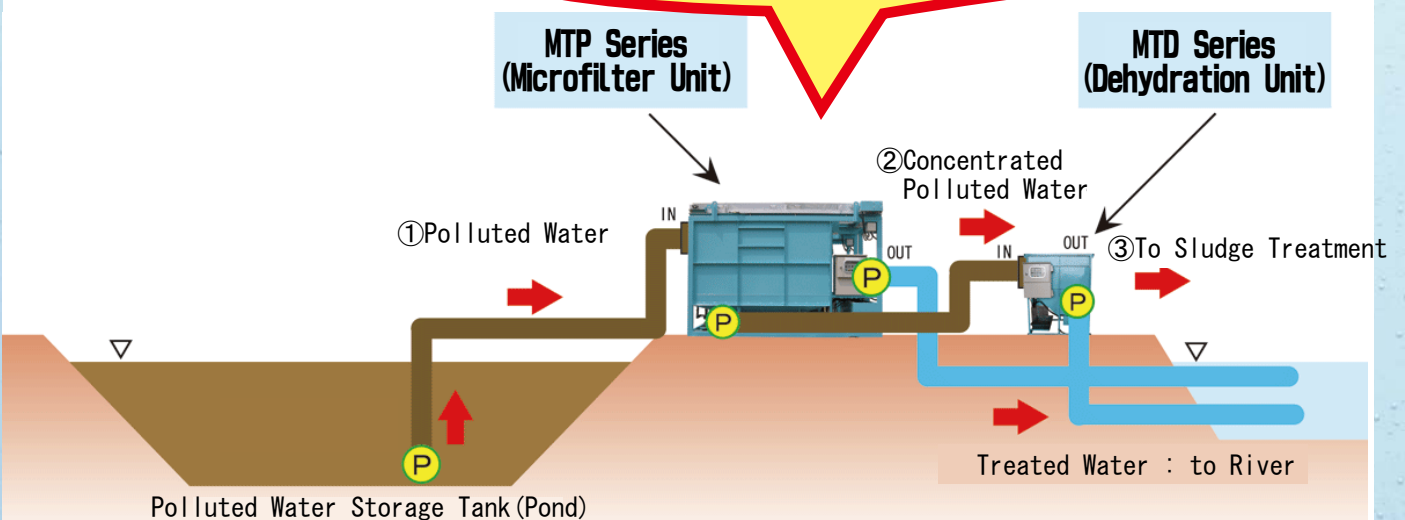
- Large space required
- Poor turbidity removal
- Added hemicals in the treatment may disturb the local public.



### ★ Macromolecule Microfilter System ★

Advantage

- Smaller space required than the conventional system
- Treated Water can be discharged without further treatment.
- No further treatment necessary due to no chemical addition to the system.

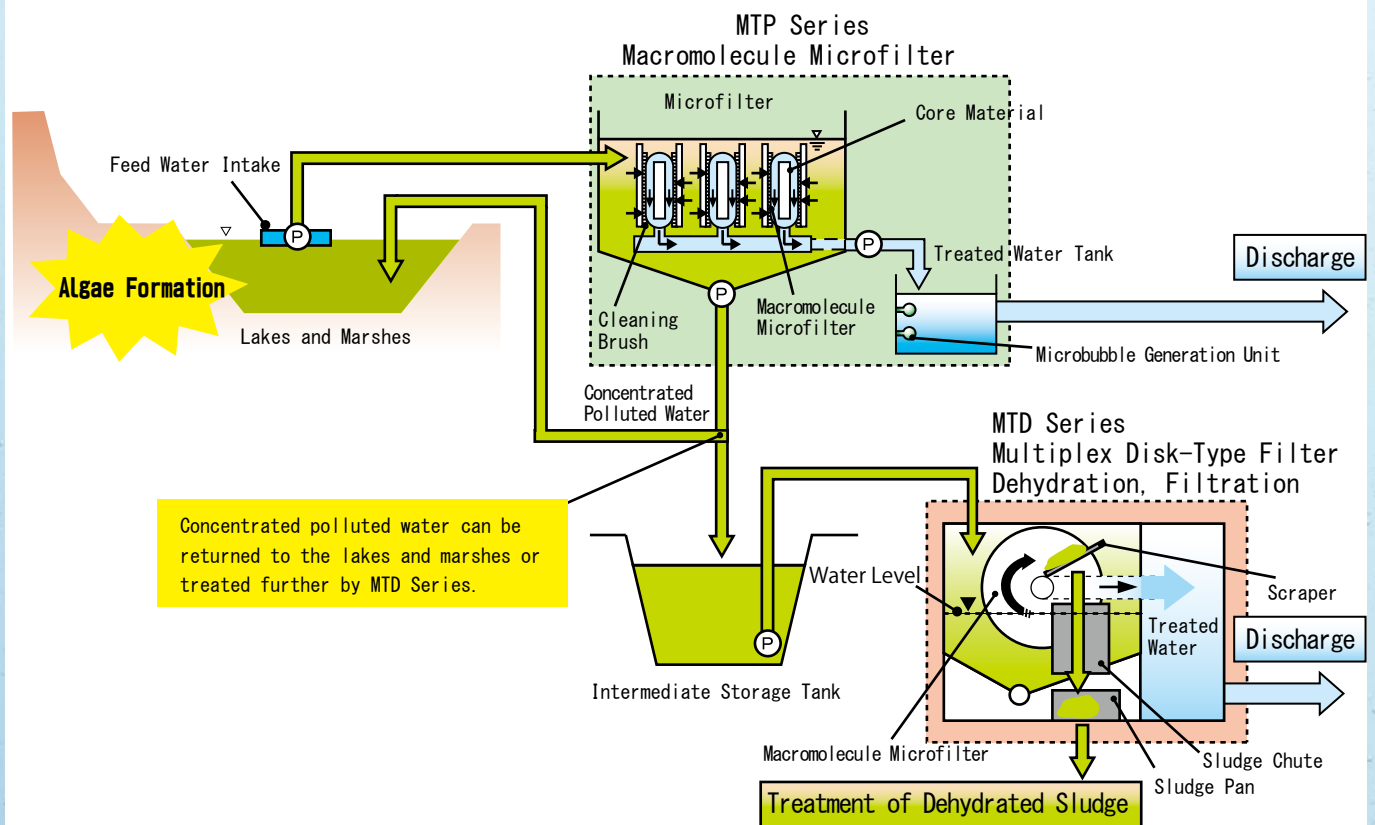


★Treatment of Algae formed in lakes and marshes★

Algae formed in lakes and marshes can be removed by Macromolecule Microfilter System. Maximum 96% of chlorophyll-a can be removed in the treatment of reservoir water.



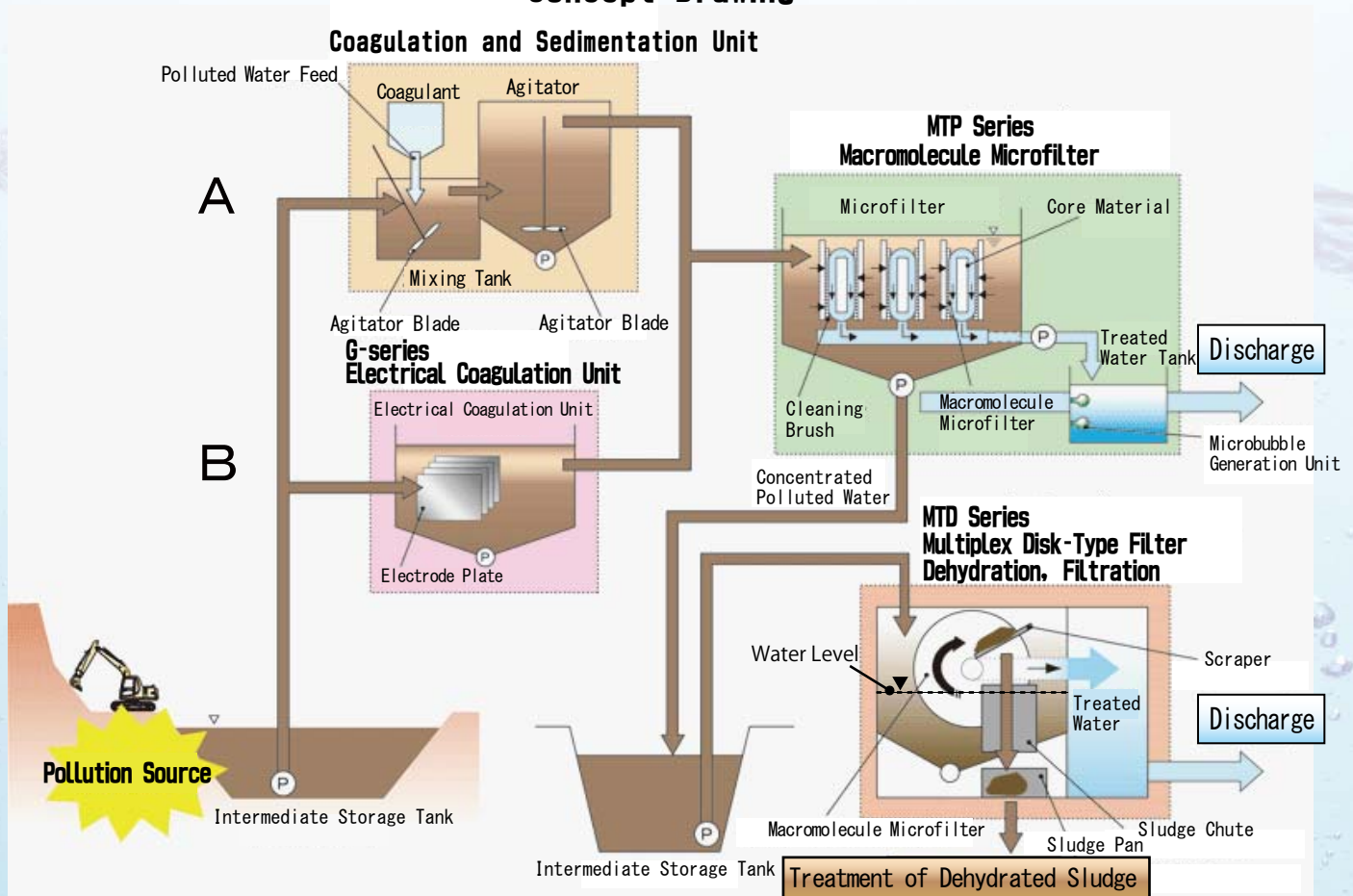
Concept Drawing



## ★ Filtration of Polluted Water with Heavy Metals ★

Polluted water with heavy metals such as lead, arsenic and iron (or dioxin originated from incineration ash) can be treated by combining the Electrical Coagulation Unit (G-Series), (or Coagulation & Sedimentation Unit) with Macromolecule Microfilter System (MTP-series).

### Concept Drawing



#### ■ Operation Performance (Example)

	Design Basis	Before Treatment	After Treatment
Suspended Solids (mg/t)	Less than 600	3550	<1
Lead and Lead related compounds (mg/t)	Less than 0.1	0.728	<0.005
Arsenic and Arsenic related compounds (mg/t)	Less than 0.1	0.112	0.018

Design Basis (Japan Sewer Control Act)



#### ■ Incineration Plant Dismantling Works

	Design Basis	Before Treatment	After Treatment
Dioxin and its group (pg-TEQ/L)	10	180	<1

※Design Basis : Japan Dioxin Control Act (Treatment of Dioxin)



# ★Reference List★

## ■Reference List (Extracted)

Customer	Feed Water	Type of System	Operation at Site	Remarks
Local Municipality	Waste Water of Land Development Work	MTP-10-20	2001	Polluted Water Treatment
Government	Waste Water of River Dredge Work	MTP-40-60 G-III 2	2003	Polluted Water Treatment
Local Municipality	Waste Water of Flood Control Gate Construction Work	MTP-10-20	2003 to 2004	Polluted Water Treatment
Government	Waste Water of River Repair Work	MTP-05-10	2004	Prefiltration of River Water
Local Municipality	Waste Water of Multi-purpose Storage Expansion Work	MTP-10-20	2004 to 2005	Polluted Water Treatment
Local Municipality	Water Purification for Agricultural Usage	MTS-03 (Ceramic Filter)	2005	River Water Treatment for Agricultural Use
Local Municipality	Waste Water of Flood Control Construction Work	MTP-40-60 G-III	2005	Polluted Water Treatment and Heavy Metal Removal
Local Municipality	Treatment of Waste Water in Land Development Work	MTC- II	2005	Filtration of Waste Water
Government	Waste Water of Land Development Work	MTP-05-10	2006	Polluted Water Treatment
Private Enterprise	Waste Water of Local Road Construction Work	MTP-05-10 MTD-06	2006	Algae Removal of Reservoir Water
Local Municipality	Waste Water of Incineration Plant Renewal Work	MTP-05-10	2006 to 2007	Recycle of Waste Water of Incineration Plant
Local Municipality	Waste Water of High Way Construction Work	MTP-05-10 MTC- II	2006 to 2007	Polluted Water Treatment and Heavy Metal Removal
Local Municipality	Waste Water of River Repair Work	MTP-40-60	2007	Polluted Water Treatment and Iron Removal
Local Municipality	Waste Water of Sewer Construction Work	MTP-03-06	2007	Spring Water Treatment
Local Municipality	Spring Water of Tunnel Construction Work	MTP-05-10	2007	Spring Water Treatment
Government	Polluted Water of Pressurized Cleaning Plant	MTP-05-10	2008	Polluted Water Treatment
Private Enterprise	Waste Water of Mining Shack Dismantling Work	MTP-03-06, MTK-1, G-1	2008	Removal of Heavy Metals
Private Enterprise	Cooling Water of Power Plant	Filtration	2008 to 2009	Treatment of Cooling Water containing Coal Ash



Polluted Water Treatment in Wire-saw Operation



Pre-filtration of River Water for Water Purification



Polluted Water Treatment and Heavy Metal Removal

## Inquiry

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The contents may be revised for product improvement without notice.

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