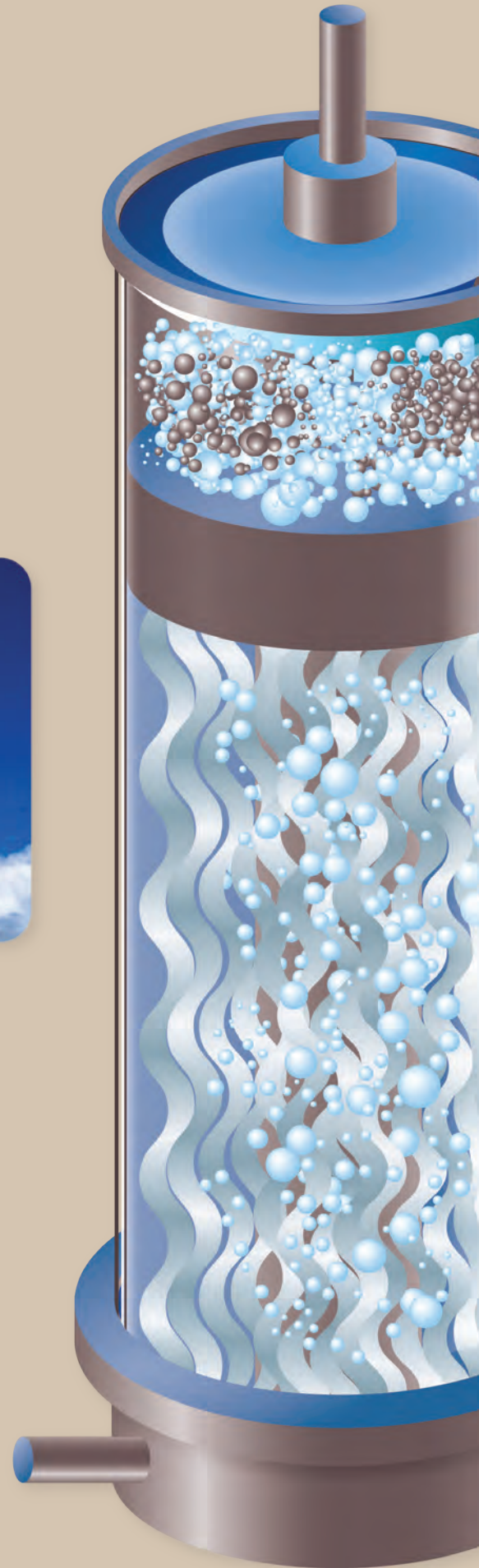




# VPMF

Perfect Backwashable  
Micro Filter



# VPMF

## The technology concerning water treatment by means of filter

Even though there are various technologies used for separating the contaminant from polluted water, one of the simplest methods is the filtering treatment. The filtering treatment has been defined as one of the best separation technologies. It prevents second contamination and has not been converted into other chemical characteristics.

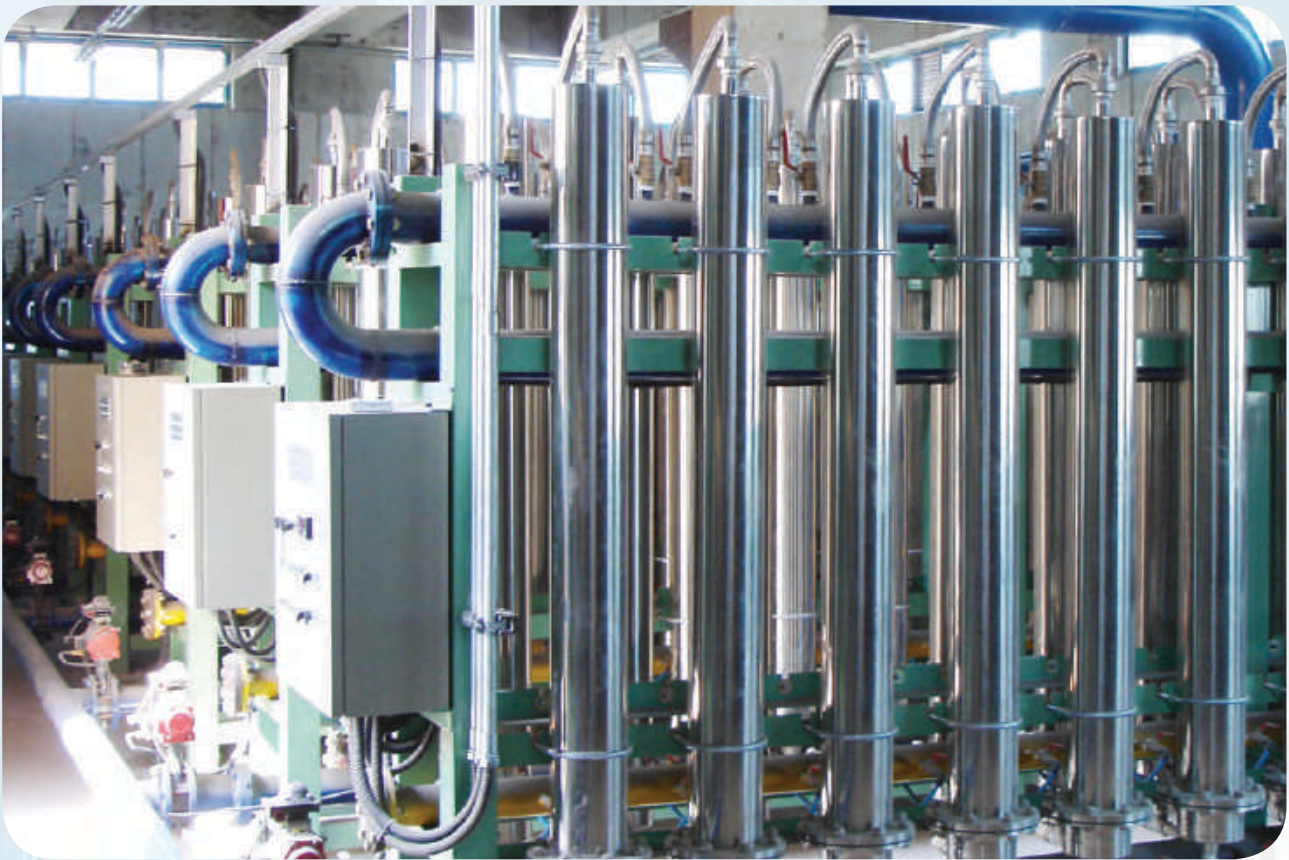
Most of the previous utilized filtration technologies were the conventional and traditional sand filter, spunbonded or melt-blown cartridge filter, highly polymerized compound, ceramic and membrane filter and metal filter. Those products have been made of the various kinds of raw materials and the respective pore size concerning the practical usage ranges available from several tens of micron to ion size. They are already available in the practical market.

Although those technologies were capable of filtering well, they were unable to be utilized at the wider applicable ranges in the industrial field. Such utilization has been limited to the purification plants and some other very simple treatments only. The reason for the limited capabilities was the result of very poor performance in backwashing.

The reason why the conventional filtering systems has such a poor backwashing performance was due to the fixed pore structure. Because it was very difficult to be re-penetrated into the fouled pore structure.

Accordingly, it has been recognized that the variable pore structured micro filter should be developed so as to improve the efficiency of backwashing.

As shown on figure 1, the commercialized filters are being divided into the pore structure and the surface structure. Most of conventional and traditional variable pore structure type filters have been very limited to the size that is bigger than 20-micron. This size has been very inefficiency low filtering process. Therefore, our environmental technology R&D team has developed a new product, the VPMF , with a variable pore structure which took over 10 years . At the moment , the VPMF products are being operated and maintained in good conditions at almost 50 plants in the various industrial fields in Korea.



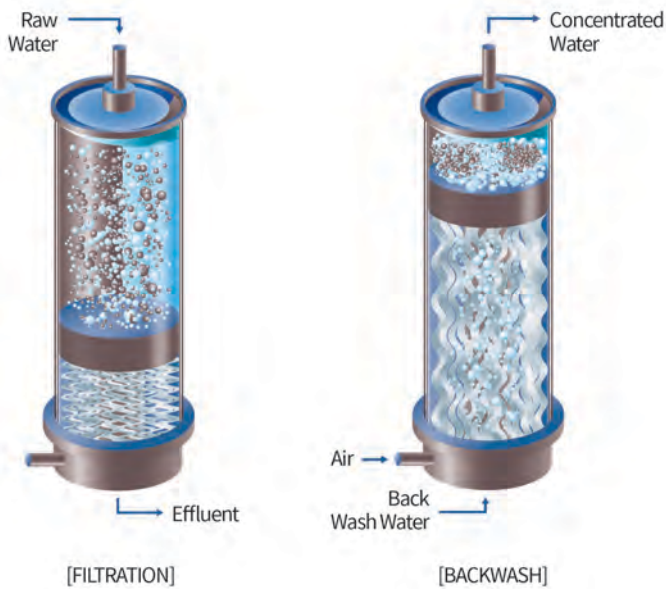
[Figure 1]

| Pore Structure | Surface Structure | Commercial Products              | Pore Size Distribution |        |       |      |     |      |       |
|----------------|-------------------|----------------------------------|------------------------|--------|-------|------|-----|------|-------|
|                |                   |                                  | .0001µm                | .001µm | .01µm | .1µm | 1µm | 10µm | 100µm |
| Fixed Pore     | Depth Type        | Catridge Filter                  |                        |        |       |      |     |      |       |
|                |                   | Bag Filter                       |                        |        |       |      |     |      |       |
|                | Screen Type       | Membrane Filter (Hollow Filter)  | RO                     |        | UF    |      | MF  |      |       |
| Variable Pore  | Depth Type        | Sand Filter (Multi Media Filter) |                        |        |       |      |     |      |       |
|                |                   | <b>VPMF</b>                      |                        |        |       |      |     |      |       |
|                | Screen Type       | Precoating Filter                |                        |        |       |      |     |      |       |
|                |                   | Cross Filter                     |                        |        |       |      |     |      |       |
| Leaf Filter    |                   |                                  |                        |        |       |      |     |      |       |



# What is the VPMF?

Variable Pore-structure Micro Filter

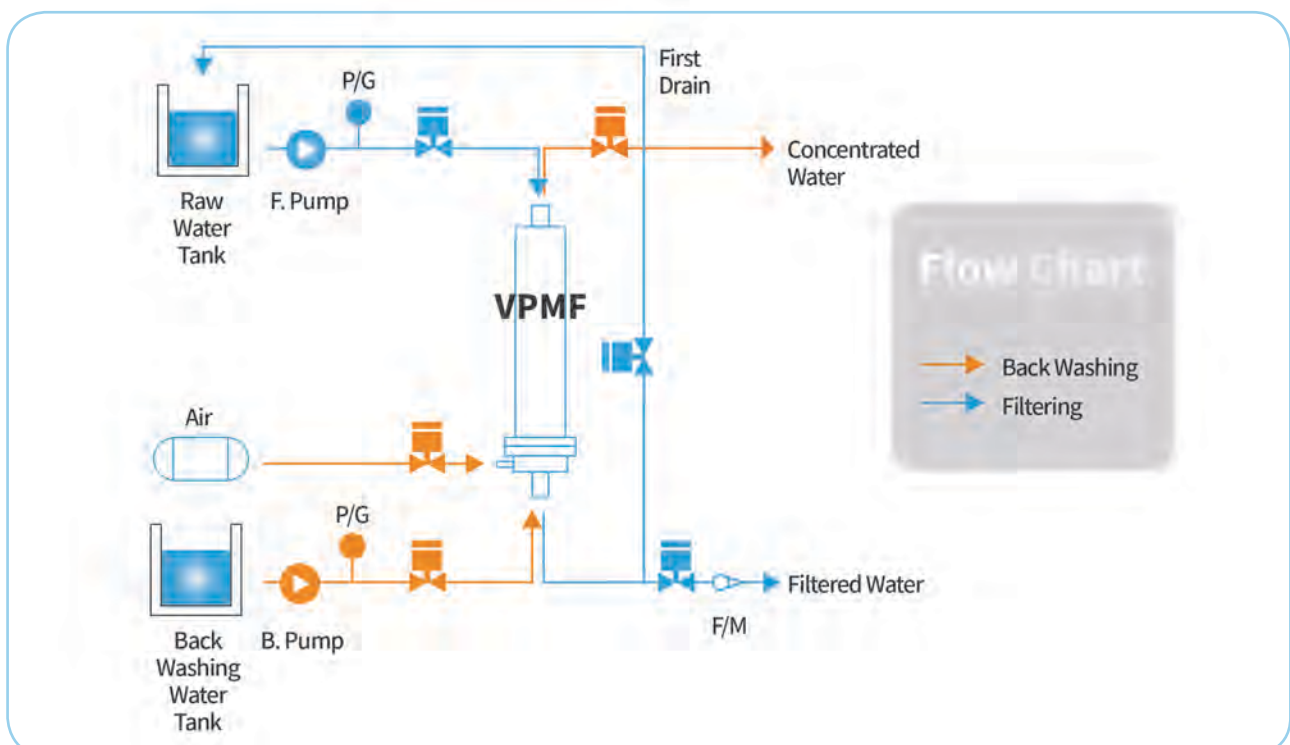


## Filtration Process





The inflow of raw water through its inlet gradually compresses the cylindrical filter. If the filter pressure reaches critical (or optimum) depth, the filter pressure will not occur. Through the pressure filter layer, the raw water will be filtered for discharging the water into an effluent inlet.

## Backwashing

If the backwashed water and air are poured through the effluent inlet, the compressed filter will be gradually expanded in an upward direction. Thereafter, the pore structure divides into pieces and the fine air bubble separates the pollutants between the filters to discharge it into the raw water inlet. At this time, the cylindrical filter slightly vibrates itself resulting in the synergism of washing and conducts full backwashing.



## Specification of VPMF

| Model        | Pore size | Flowrate               | Dimension           | Picture   |
|--------------|-----------|------------------------|---------------------|---|
| TQ-P20       | 10µm      | 3m <sup>3</sup> /hr    | Φ178 x 1825H        |    |
| MQ-P20       | 5µm       | 2.5m <sup>3</sup> /hr  |                     |   |
| HQ-P20       | 1µm       | 1.5m <sup>3</sup> /hr  |                     |   |
| SQ-HP20      | 0.5µm     | 1.2m <sup>3</sup> /hr  |                     |   |
| UQ-HP20      | 0.2µm     | 0.9m <sup>3</sup> /hr  |                     |   |
| TQ-P20-TB04  | 10µm      | 12m <sup>3</sup> /hr   | 464W x 464L x1825H  |    |
| MQ-P20-TB04  | 5µm       | 10m <sup>3</sup> /hr   |                     |   |
| HQ-P20-TB04  | 1µm       | 6m <sup>3</sup> /hr    |                     |   |
| SQ-HP20-TB04 | 0.5µm     | 4.8m <sup>3</sup> /hr  |                     |   |
| UQ-HP20-TB04 | 0.2µm     | 3.6m <sup>3</sup> /hr  |                     |   |
| TQ-P20-TB16  | 10µm      | 48m <sup>3</sup> /hr   | 945W X 945L X 2532H |   |
| MQ-P20-TB16  | 5µm       | 40m <sup>3</sup> /hr   |                     |   |
| HQ-P20-TB16  | 1µm       | 24m <sup>3</sup> /hr   |                     |   |
| SQ-HP20-TB16 | 0.5µm     | 19.2m <sup>3</sup> /hr |                     |   |
| UQ-P20-TB16  | 0.2µm     | 14.4m <sup>3</sup> /hr |                     |   |
| TQ-P20-TB64  | 10µm      | 192m <sup>3</sup> /hr  | 2182W X2297LX2722H  |  |
| MQ-P20-TB64  | 5µm       | 160m <sup>3</sup> /hr  |                     |   |
| HQ-P20-TB64  | 1µm       | 96m <sup>3</sup> /hr   |                     |   |
| SQ-HP20-TB64 | 0.5µm     | 76.8m <sup>3</sup> /hr |                     |   |
| UQ-HP20-TB64 | 0.2µm     | 57.6m <sup>3</sup> /hr |                     |   |

## Operating conditions

| Item                        | Description                          |             |                         |                         |
|-----------------------------|--------------------------------------|-------------|-------------------------|-------------------------|
| Operating Pressure          | 1.5~2.5kg/cm <sup>2</sup>            |             |                         |                         |
| Maximum Temperature         | 60°C (Contact us for more than 60°C) |             |                         |                         |
| Control of Backwash         | Filtration Time or Flowrate          |             |                         |                         |
| Backwash Method             | Filtered water & Plant Air           |             |                         |                         |
| Backwash Time               | 3~5 minutes                          |             |                         |                         |
| Q'ty of Backwash Air flow   | (H)P20                               | (H)P20-TB04 | (H)P20-TB16             | (H)P20-TB64             |
|                             | 170LPM                               | 680LPM      | 2.72m <sup>3</sup> /min | 10.9m <sup>3</sup> /min |
| Q'ty of Backwash Water flow | 15LPM                                | 60LPM       | 240LPM                  | 960LPM                  |

## Material

|               |     |               |     |
|---------------|-----|---------------|-----|
| Housing       | PVC | Filter Holder | POM |
| Permeate Pipe | ABS | Micro Fiber   | PET |

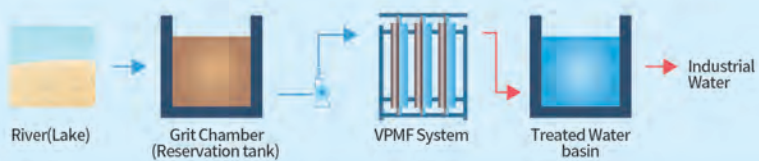
# The Range of Applications

In case of polluted sewage, it can be treated and then diverted into the artificial pond, which can be the environmental

## Application of VPMF

### Potable Water Treatment without coagulation

- To replace Coagulation /Sedimentation/Sand filter



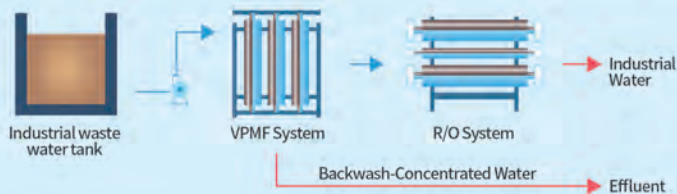
### Tertiary Treatment of Sewage

- To replace Membrane filter
- To replace Sand filter & AC filter



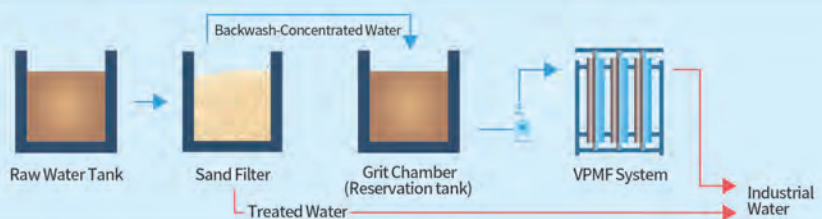
### Pretreatment of Desalination

- To replace Coagulation /sedimentation/multimedia filter
- To replace DAF/UF



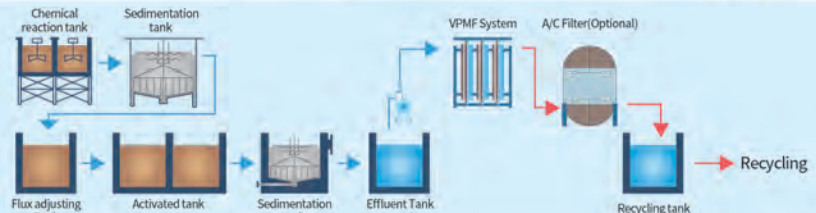
### Recycling of Backwashed wastewater of Sand filter

- Replacement of existing wastewater treatment process



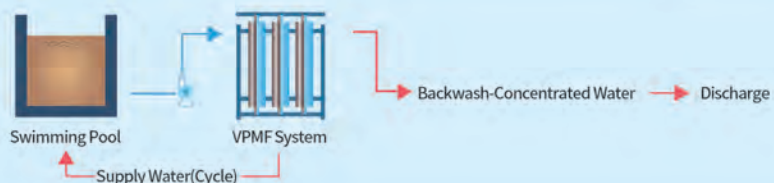
### Recycling of Industrial wastewater

- To replace Sand filter/AC Filter



### Swimming Pool

- To replace Sand filter
- To replace Precoating filter





## Perfect Backwashable Micro Filter

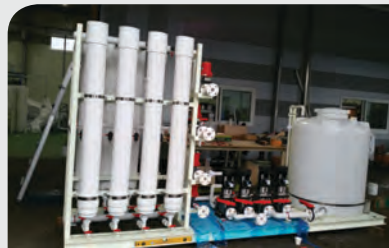
- Small footprint
- Low operating Cost
- No effect on the variation of raw water turbidity



- Small footprint
- Low operating cost
- No CIP



- Small footprint
- Low operating cost
- No CIP



- To reduce cost to treat complex wastewater
- To save cost for resource water



- Small footprint
- Low operating cost
- No CIP



- Better treated water quality
- Lifetime of filter is very long
- No coating slurry





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