



# DE NORA TETRA<sup>®</sup>

modular DeepBed™ Filter (mDBF)

**Flexible and packaged solutions to meet your TSS and Phosphorus limits**





## Meet discharge consents with the flexibility of DE NORA TETRA® mDBF

The DE NORA TETRA® modular DeepBed Filter (mDBF) system is a pre-packaged tertiary effluent filtration plant for small to medium size sewage treatment works. Typical flow rates range up to 21,000 m<sup>3</sup>/d (3,850 gpm).

Offering flexible arrangements to fit into the tight footprints often found at smaller treatment works, mDBF are designed to be upgradable and expandable in the future.

Based on proven technology, the mDBF meet strict consents for Total Suspended Solids (TSS) and Phosphorus.

## DE NORA TETRA mDBF



### Meeting Tight Discharge Consents

Total Suspended Solids removal up to 90%+ and phosphorus removal to below 0.2 mg/l



### Packaged System

Easy to assemble, the mDBF arrives as a pre-assembled, pre-wired and tested control skid with all necessary equipment and internally routed piping gallery, plus separately shipped filter and clearwell tanks.

Design for Manufacture and Assembly with off-site manufacturing reduces lead time and site installation time, and ensures a quality product.



### Low Operating Costs

Efficient backwash regime

No chemical cleaning required

No media replacement required

Longer run times between backwash means lower operating costs

## DE NORA TETRA mDBF Benefits:



### Proven Design



### Meets Stringent Discharge Consents



### Easy Installation



### Low Cost



### Process Flexibility

## Process Flexibility

DE NORA TETRA mDBF treat infinitely variable flows up to the peak hydraulic flow of the filter plant. Additionally, there is no requirement for recirculation at low flows.

The filter is always able to meet the performance criteria regardless of the backwashing cycle and features a very high solids loading capacity and the ability to accommodate upstream works upsets in an emergency.

No works downtime is required while the filter plant is maintained. mDBF also include built in redundancy e.g. standby backwash pumps & blowers/multiple filter cells. Additionally, no strainer or screen is required on the inlet to the filter.

DeepBed technology is upgradable to DE NORA TETRA Denite® for denitrification applications.

## Proven Technology

The design uses the same proven DeepBed™ filtration process that has been successfully employed for many years in Europe, Asia, and the United States for tertiary treatment.

Featuring the DE NORA TETRA SNAP T® Block, a nozzle-less underdrain, a reverse gradation of gravel layers, and a deep bed of unique mono media with stainless steel air distribution for backwashing, mDBF provides very effective filtration performance and long run times between backwashes.

## Remote Monitoring

DE NORA TETRA mDBFs feature an optional Remote Monitoring System.

Built upon Microsoft's Azure® platform, the mDBF local control panel can be installed with cellular network hardware to offer secure, read only, one-way communication with the cloud. The cloud-based application features customized alarms, graphs and visualization dashboards to enable a live view of your filter in operation. Notification of alarms or unusual activity keep you in touch with your system 24/7.

Data logging allows troubleshooting, optimization of operation and lowering backwash water and power consumption. Your data can also be integrated with automated work streams such as SAP® or Salesforce.com®.

# Experience and performance you can trust

DE NORA TETRA mDBF systems are installed at over 50 installations in the UK alone, in municipal water treatment sites. Based on proven DeepBed technology installed at hundreds of sites worldwide to meet strict discharge consents.



## DE NORA TETRA mDBF Technical Data

<b>Media depth (2-3mm media)</b>	<b>Minimum 1.2m (47 inch)</b>
<b>Filter tanks</b>	<b>from 2-12</b>
<b>Backwash water return</b>	<b>2-4 percent of forward flow</b>
<b>Backwash duration</b>	<b>20 to 30 minutes</b>
<b>Number of backwashes / day / cell</b>	<b>1 (typically)</b>
<b>Rate of backwash water</b>	<b>12 to 15 m/hr 5/6 gpm/ft<sup>2</sup></b>
<b>Rate of backwash air</b>	<b>60 to 90 m/hr 3 to 5 cfm/ft</b>
<b>Total Suspended Solids Removal</b>	<b>Up to &gt;90%</b>
<b>Phosphorus Output</b>	<b>0.2 mg/l or less</b>



## About De Nora

Backed by 100 years of experience, you can be confident in the reliability and safety of DE NORA TETRA®. De Nora is the partner-of-choice for communities and companies around the globe. In fact, more than 500 million people around the world drink water treated by De Nora products every single day.

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